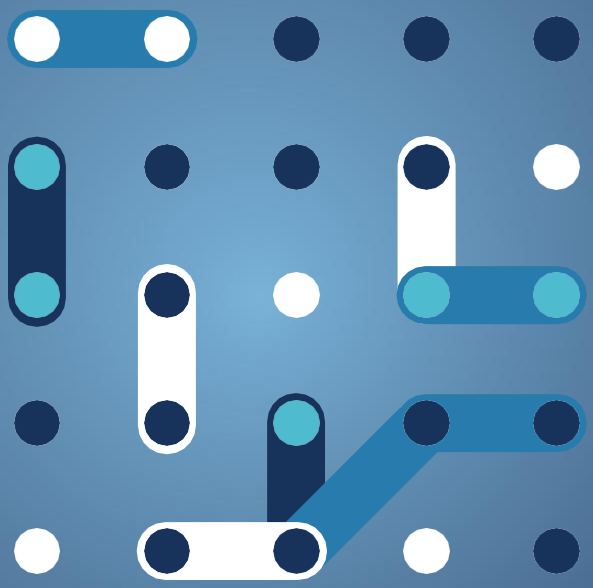
European Commission

bridge

Report on energy sharing

Regulation Working Group



July 2025

Regulation Working Group: Report on energy sharing

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AUTHORS

Report coordinator:
Karine Laffont-Eloire (DOWEL Innovation)

Bernadette Fina (AIT)
Carolin Monsberger (AIT)
Andreas Tuerk (Joanneum Research)
Quentin Donnette (SmartEN)
Janka Vanschoenwinkel (VITO)
Luciana Marques (VITO)
Juan C. Vasquez (University of Aalborg)
Wilhelm Süßenbacher (University of Applied Sciences Upper Austria)
Aro Matti (VTT)
Christophe Dufour (SICAE de la Somme et du Cambraisis)
Nils Casteras (SICAE de la Somme et du Cambraisis)
Gerhard Meindl (SWW)
Evyatar Littwitz (ESG)
Avril Ní Shearcaigh (Aran Islands Energy Co-Op)
Stephanie Brennan (Aran Islands Energy Co-Op)
Emilio Ghiani (University of Cagliari)
Sara Ruffini (R2M Solution)
Ries Verhoeven (Energie Samen)
Laura Bordo (RINA Consulting)
Ursula Krisper(Elektro Ljubljana)
Aleš Ažman (EG)
Gonçalo Glória (RDN)
Ângelo Casaleiro (RDN)
Lucía Aller (Aiguasol)
Vicente Carabias-Hutter (ZHAW)
Pascal Kienast (ZHAW)
Martina Rechsteiner (ZHAW)
Paola Mazzucchelli (CIRCE)
Filipe Silva (EDP)
Juan Ignacio Pérez-Diaz (Universidad Politecnica de Madrid)
Alina Anapyanova (University of Passau)
Michael Niederkofler (Energie Kompass)
Natalia Lisowska (Groningen Centre of Energy Law and Sustainability)
Ondřej Černý (E.DSO)

SUPPORT FROM BRIDGE SECRETARIAT

Radu Alexandru Lupascu (PwC Italy)

Eleonora Rebora (RINA Consulting)

BRIDGE WG LEADERSHIP

Helena Gerard *(VITO – Flemish Institute for Technological Research),* WG Chair until March 2025

José Pablo Chaves Ávila *(Comillas Pontifical University)*, leader of Action 3 until March 2025, WG Chair from March 2025

Karine Laffont *(Dowel Innovation)* Action 2 leader

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Directorate B – Just Transition, Consumers, Energy Efficiency and Innovation Unit B5 – Innovation, Research, Digitalisation, Competitiveness

Contact: Mark Van-Stiphout

E-mail: mark.van-stiphout@ec.europa.eu

European Commission

B-1049 Brussels

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Acronyms

CEC	Citizen energy community
CEF	Connecting Europe Facility
CEP	Clean Energy Package
CSC	Collective self-consumption
DR	Demand Response
DER	Distributed Energy Resources
DSO	Distribution System Operator
EC	European Commission
EMD	Electricity Market Design
ESO	Energy Sharing Organiser
EV	Electric Vehicle
GA	General Assembly
LEC	Local Energy Community
LV	Low Voltage
MV	Medium Voltage
MS	Member State
NRA	National Regulatory Authority
OSS	One-Stop-Shop
P2P	peer-to-peer
PED	Positive Energy District
PV	Photovoltaics
REC	Renewable energy community
RED	Renewable energy Directive
RES	Renewable energy source
SME	Small and medium enterprise
TSO	Transmission System Operator
WG	Working Group

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Executive summary

'Energy sharing', sometimes referred as collective self-consumption (CSC), allows citizens to share self-generated electricity with their neighbourhood (or even beyond) on a contractual basis. However, as of early 2025, among all 27 EU member states, only a few of them have implemented functional energy sharing frameworks. This regulatory landscape has been recently enriched by a proposal from the European Commission to improve the EU Electricity Market Design (EMD) and amend the relevant regulations and directives[1]. The proposal was formally adopted in June 2024[2] and operationalises energy sharing by defining relevant roles, rights and responsibilities and expanding the right to wider categories of active customers. This is of specific interest for the BRIDGE projects that have activities related to energy sharing, P2P trading and energy communities.

Since September 2023, Action 2 of the Regulation WG has been investigating the role of peer-to-peer (P2P) and energy sharing in the overall market design, investigating barriers and their potential to facilitate energy community adoption. Action 2 has thus centred its activities on energy sharing and peer-to-peer trading, while also expanding its focus to include energy communities and their capabilities in conducting energy sharing or P2P trading. Since then, more than 20 projects – with demonstrations spanning more than 15 countries – have participated in Action 2, either through participation in interactive sessions or through surveys

BRIDGE projects participating in Action 2 from September 2024 onwards have investigated the national regulations related to energy sharing in the countries where they have demonstrations. This has led to the review of 15 countries. The result of this collective work is presented in the form of "Country fact sheets", and highlights the highly diverse way energy sharing is regulated in those countries. Countries where regulation is rather advanced include Portugal, France, Spain, Italy and Austria. However, the regulatory frameworks in those countries still have some limitations and in several cases, fully dynamic energy sharing coefficients are not possible yet. Regulatory frameworks are being developed in Central and Northern Europe (e.g. Germany, Czechia, Sweden, the Netherlands, Denmark) but are not functional for now. Overall, there is a positive move towards the establishment of supportive regulation of energy sharing throughout Europe. The sharing of good practices is critical at this stage, to ensure that regulation truly supports energy sharing initiatives and also implements a level playing field for those citizen-led schemes.

This collective review has sparked dynamic discussions among projects, encouraging them to share knowledge and valuable lessons. This embodies the true essence of the BRIDGE initiative: enabling projects to learn from one another and accelerate progress together. As a result, several projects have provided detailed insights and information on their demonstrations, sharing good practices to benefit the wider community and enhancing collaboration.

The barriers to the implementation of energy sharing were also collectively identified through surveys and interactive workshops. While most barriers are of a regulatory nature or related to market design, others are financial, technical or social. Recommendations to address these were identified and prioritised during two interactive workshops. Eight key recommendations were finally put forward.

Priority	Recommendation	*EU level*	*MS level*
1	Create implementing guidelines for MSs for energy sharing : clear definition, responsibilities of the different market players, and how it can be done (including through P2P trading), making sure that national regulations on energy sharing include necessary provisions on inclusiveness and consumer protection	✓	✓

[1] COM(2023) 148 final, 2023/0077 (COD), *Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design*

[2] DIRECTIVE (EU) 2024/1711 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 June 2024 amending Directives (EU) 2018/2001 and (EU) 2019/944 as regards improving the Union's electricity market design

Priority	Recommendation	*EU level*	*MS level*
2	Set up national and EU working groups bringing together regulatory bodies, DSOs, suppliers, representative bodies for energy sharing participants (to be created if necessary), and EU projects, to share lessons learned and good practices (incl. on sharing coefficients)	✓	✓
3	Simplify legal registration process for communities, e.g. with a digital registration system	✓	✓
4	Allow for the creation of local energy markets to enable trading between communities		✓
5	When not already done, deploy intelligent metering system and harmonised communication standards		✓
6	Support DSOs so they can enable energy sharing, incl. data sharing with market actors	✓	✓
7	Implement a systemic and cross-sectoral approach, to avoid silos between electricity, heat, DH&C, gas and mobility	✓	✓
8	Set out a clear framework at EU level for data governance in the energy sector (data access, ownership, privacy, cybersecurity), with guidelines for MS on how to implement at national level, to build trust and enable new business models for energy sharing *(link to Action on Data Spaces)*	✓	✓

1. Introduction

1.1 Introduction BRIDGE Regulation WG

The BRIDGE Regulation Working Group (WG) was established at the origin of the BRIDGE initiative to foster knowledge sharing among H2020 projects affected by or addressing different regulatory aspects in the energy domain.

The Regulation WG, as the entire BRIDGE initiative, structures its activities on a yearly basis. In the last years, different topics have been addressed, resulting in most cases on specific reports that can be shared not only within the BRIDGE community, but with a larger audience.

The Regulation WG is a live group where projects join and leave as they naturally evolve. This "staff rotation" facilitates a dynamic environment for the introduction of new topics of interest. The Regulation WG will continuously look for synergies with other BRIDGE Working Groups, and working groups outside BRIDGE (ISGAN, ETIP SNET, …). The Regulation WG will determine the most important regulatory challenges to be addressed, propose best practices from the BRIDGE projects and inform policy. In addition, thematic knowledge sharing sessions are organised to present best practices from projects about to end.

1.2 Topics investigated in Action 2

In 2024, the work of the Regulation WG focused on 5 main objectives, translated into 5 actions (Table 1):

Table 1: Regulation WG's Action Plan 2024

Action n.	Action title	Note
Action 1	Improve **market access** for consumers to value their flexibility	*Continuation of Action 1 (2023)*
Action 2	**Peer-to-peer and energy sharing**	*Continuation of Action 2 (2023)*
Action 3	Energy and flexibility market coordination and integration	*Continuation of Action 3 (2022)*
Action 4	Support the potential synergies coming from **increased sector coupling/sector integration/system integration**	*Continuation of Action 4 (2023)*
Action 5	Support the **system operators to prepare the grid for 2030**	*Continuation of Action 5 (2023)*

Action 2 initially focused on energy communities and how they could provide grid services.

The 2023-2024 Work Plan of the Regulation WG then asked Action 2 to investigate the role of peer-to-peer (P2P) and energy sharing in the overall market design, investigating barriers and their potential to facilitate energy community adoption. Action 2 thus centred on energy sharing and peer to peer trading, while also expanding its focus to include energy communities and their capabilities in conducting energy sharing or P2P trading.

1.3 Participating projects

Since September 2023, more than 20 projects have participated in Action 2, either through participation to interactive sessions, or through surveys: **ACCEPT, COMMUNITAS, DATA CELLAR, Eddie, eNeuron, FEDECOM, Flexchess, iFLEX, LocalRES, OMEGA-X, OPENTUNITY, POCITYF**, **RENergetic, ENERGETIC, ODEON, PARMENIDES, SENDER, EU-DREAM, DEDALUS, U2DEMO and PEDvolution**.

Figure 1: Projects that participated in Action 2 for the BRIDGE year 2024-2025

Most projects focus on energy sharing or P2P trading, others focus on renewable or citizens energy communities and involve communities as part of their pilots. Some of the projects are more related to flexibility or data management but include energy communities or energy sharing as a use case.

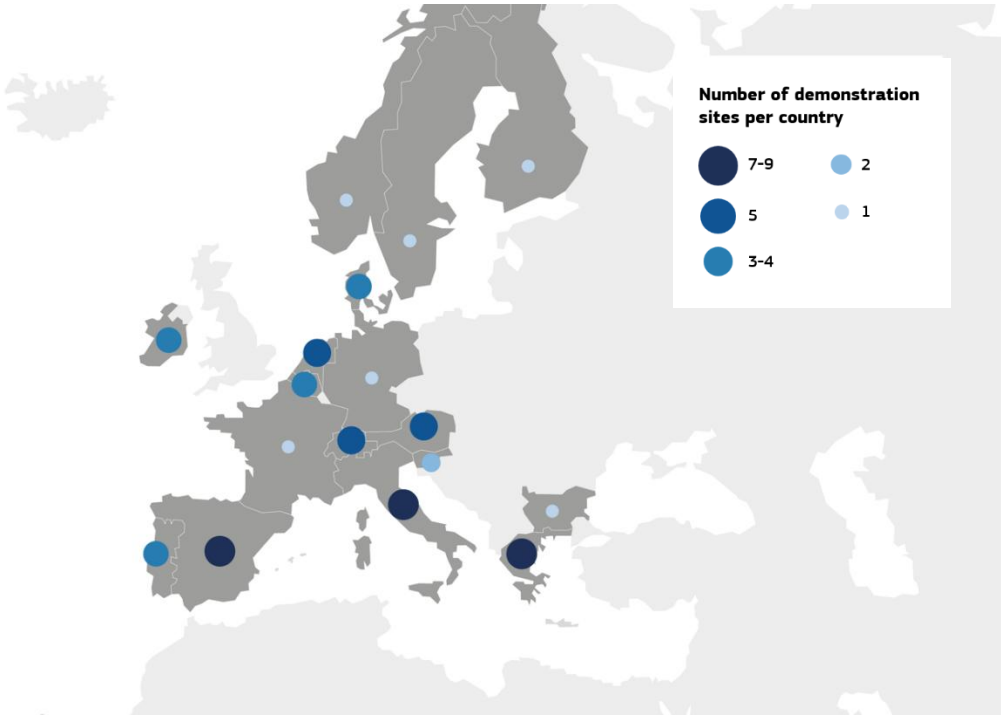

Figure 2: Location of the demonstrations of the projects participating in Action 2 since September 2024

2. Regulatory Landscape at EU level

'Energy sharing', sometimes referred as Collective self-consumption (CSC), allows citizens to share self-generated electricity with their neighbourhood (or even beyond) on a contractual basis. However, as of early 2025, among all 27 EU member states, only a few of them have fully implemented functional energy sharing frameworks.

Energy Communities are a new market actor created by the Clean Energy for all Europeans Package, adopted in 2019, with the aim of organising collective and citizen-driven energy actions that help pave the way for a clean energy transition. The activities they are allowed to carry out include joint generation and consumption of renewable energy – in other words they can take part in energy sharing.

Energy sharing	Peer-to-peer trading	Energy communities
Defined by Directive (EU) 2024/1711	Defined in Directive (EU) 2018/2001	Defined in Directive (EU) 2018/2001 (REC) and Directive (EU) 2019/944 (CEC)
Means the **self-consumption by active customers of renewable energy** either: - generated or stored offsite or on sites between them by a facility they own, lease or rent in whole or in part; or - the right to which has been transferred to them by another active customer for a price or free of charge.	The sale of renewable energy between market participants by means of a **contract with pre-determined conditions governing the automated execution and settlement of the transaction**, either directly between market participants or indirectly through a certified third-party market participant, such as an aggregator	Different definitions for RECs and CECs, but both shall provide **environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits.** The activities they are allowed to carry out include joint generation and consumption of renewable energy.
An activity	**A contract**	**An organisational concept**

2.1 Energy sharing

The regulatory landscape related to energy sharing has been recently enriched by a proposal from the European Commission to improve the EU Electricity Market Design (EMD) and amend the relevant regulations and directives[3]. The proposal was politically agreed at the end of 2023, and was formally adopted in June 2024[4]. It is of specific interest for the BRIDGE projects related to energy sharing, P2P trading and energy communities. The proposal indeed operationalises energy sharing by defining relevant roles, rights and responsibilities and expanding the right to wider categories of active customers.

According to Directive 2024/1711, **'energy sharing**' means the self-consumption by active customers of renewable energy either:

- generated or stored offsite or on sites between them by a facility they own, lease, rent in whole or in part; or
- the right to which has been transferred to them by another active customer whether free of charge or for a price.

Article 15a of the directive then defines the "**Right to energy sharing**":

- All households, small and medium-sized enterprises and public bodies and, where Member States have decided so, other categories of final customers, shall have the right to participate in energy sharing as active customers

[3] COM(2023) 148 final, 2023/0077 (COD), *Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union's electricity market design*
[4] DIRECTIVE (EU) 2024/1711 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 June 2024 amending Directives (EU) 2018/2001 and (EU) 2019/944 as regards improving the Union's electricity market design

in a non-discriminatory manner, within the same bidding zone or a more limited geographical area as determined by the Member State.

- Active customers shall be entitled to share renewable energy between themselves based on private agreements or through a legal entity. Participation in energy sharing cannot constitute part of the primary commercial or professional activity of the customers engaged in energy sharing. Active customers may appoint a third party as an energy sharing organiser for purposes of:

    a. communication on the energy-sharing arrangements with other relevant entities, such as suppliers and network operators, including aspects related the applicable tariffs and charges, taxes or levies;
    b. providing support in managing and balancing the behind-the-meter flexible loads, distributed renewable generation and storage assets that are part of the relevant energy sharing arrangement;
    c. contracting and billing of active customers participating in energy sharing;
    d. installation and operation, including metering and maintenance, of the generation or storage facility.

The **energy sharing organiser**, or another third party may own or manage a storage or renewable energy generation facility of up to 6 MW, without being considered an active customer, unless it is one of the active customers participating in the energy-sharing project. The energy sharing organiser shall provide non-discriminatory services and transparent prices, tariffs, and terms of services, and for point (d) Articles 10, 12 and 18 shall apply. Member States shall set the framework for the application of the provisions on this paragraph at national level.

The directive also states in its introduction that "Any payment for sharing of excess production for a price can either be settled directly between active customers or automated through a peer-to-peer trading platform. Energy sharing arrangements are either based on private contractual agreement between active customers or organised through a legal entity. A legal entity that incorporates the criteria of a **renewable energy community (REC)** as defined in Directive (EU) 2018/2001 or a **citizen energy community (CEC)** as defined in Directive (EU) 2019/944 could share with their members electricity generated from facilities they have in full ownership".

Energy sharing is therefore not limited to the scope of energy communities anymore and can entail payments among those sharing energy. Energy sharing can be enabled through peer-to-peer trading platforms, but peer-to-peer is not defined.

Peer-to-peer trading of renewable energy had previously been defined in point (18) of Article 2 of the Directive (EU) 2018/2001 as "the sale of renewable energy between market participants by means of a contract with pre-determined conditions governing the automated execution and settlement of the transaction, either directly between market participants or indirectly through a certified third-party market participant, such as an aggregator". Peer-to-peer trading can equally take place in exchange for a payment, by means of a contract. Contrarily to energy sharing, peer-to-peer trading is to be executed in an automated way and is limited to the sale of renewable energies only, as defined in the Directive 2018/2001. Peer-to peer trading can also be between all types of market participants (producers, aggregators, communities, suppliers, active customers), while energy sharing is only between active customers. It is left to the Member States to decide how they wish to implement those definitions and distinguish the two activities in their regulatory framework: in some cases energy sharing for a price with automated settlement features overlaps partially with the scope of peer-to-peer trading.

2.2 Energy communities

Energy Communities are a new market actor created by the Clean Energy Package for All Europeans. This was adopted in 2019, with the aim of organising collective and citizen-driven energy actions to help towards a clean energy transition, while moving citizens to the fore and increasing public acceptance of renewable energy projects. Two directives from the Clean Energy Package are of relevance: the Internal Electricity Market Directive, which introduces Citizen Energy Communities (CEC), and the Renewable Energy Directive, which defines Renewable Energy Communities (REC). Although REC and CEC are both energy communities, with the same primary purpose. The activities they are allowed to carry out are not the same, as detailed in Table 2Table 2.

Table 2: Definition of Renewable Energy Communities and Citizen Energy Communities

Type of EC	Renewable energy community (REC)	Citizen energy community (CEC)
Directive	Renewable Energy Directive (Article 22) 'REDII'	Electricity Market Directive (Article 16) 'EMDII'
Transposition	Deadline 30/06/21	Deadline 31/12/20
Primary purpose	To **provide environmental, economic or social community benefits to its members** or shareholders or to the local areas where it operates rather than to generate financial profits	
Energy carriers	Electricity and more (biogas, heat)	Electricity
Allowed activities	**Generation, consumption, storage and sales of renewable energy, incl. through PPA** *Access to energy markets (directly or through aggregation) should be non-discriminatory*	**Generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provision of other energy services to its members & shareholders** *Access to electricity markets (directly or through aggregation) should be non-discriminatory*
Membership / control	Open and voluntary participation, autonomous, effective control Citizens, local authorities and SMEs *(for private: should not be the primary commercial activity)*	Open and voluntary participation, effective control Citizens, local authorities and small and micro enterprises
Geographic limitation	Shareholders or members must be located close to the RE projects that are owned & developed by the REC	No geographic limitation, MS can choose to allow cross-border CEC

Both types of energy communities are recognised the right to access energy markets (directly or through aggregation) in a non-discriminatory way according to the EU directives. However the main determinants of the

feasibility of RECs and CECs (and the possibility to access markets) are the national legislations in the EU Member States, which are closely related to the way the Renewable Electricity Directive and the Internal Electricity Market Directive have been transposed. The feasibility and viability of energy communities are also impacted by uncertainties and challenges in legal and administrative procedures, the maturity of the energy markets, the network codes, tariff schemes and grid fees, to name but a few.

3. National regulations

3.1 Literature review

Several reports recently investigated the regulatory context at Member State level with regard to energy sharing, including:

- Energy Community Repository (2024) ENERGY SHARING FOR ENERGY COMMUNITIES - A REFERENCE GUIDE
- ENTEC (2023) Multi-supplier models and decentralised energy systems
- SolarPower Europe (2023) White Paper on a Framework for Energy Sharing

These reports highlight the differences between Member States in the way they enable and implement energy sharing. The first report also delivers first-hand information about the status of Energy Communities (both RECs and CECs) at Member State level. Figure 3 below shows how this energy sharing can take multiple forms. Only some of these may be allowed in certain Member States.

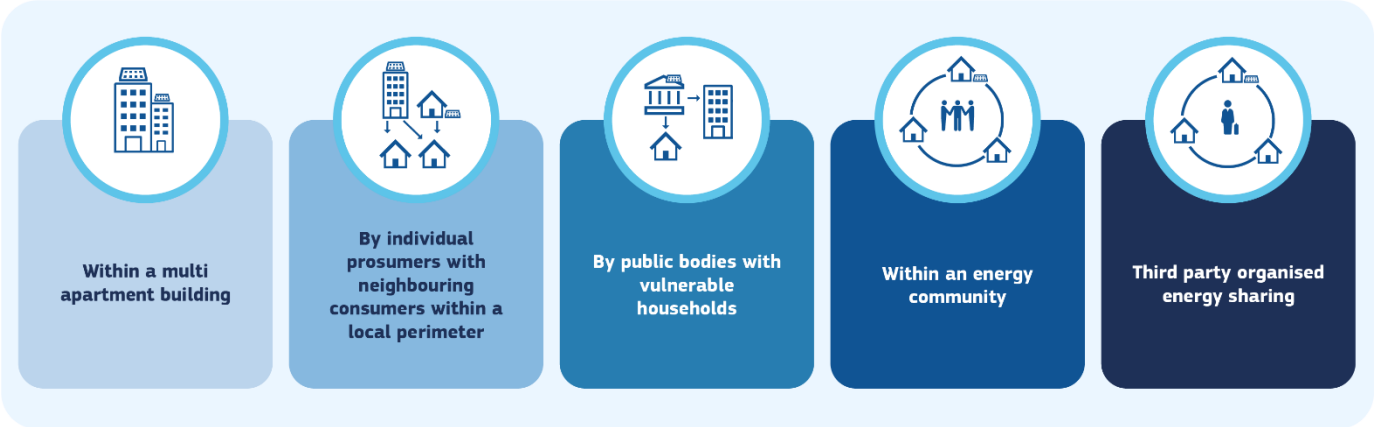

Figure 3: the multiple forms that energy sharing can take

A strong disparity can thus be seen among Member States about the energy sharing coefficients, which can be determined with an ex-ante or an ex-post allocation, and which can be static or dynamic. The timeframes at which coefficients can be changed also differ from monthly to yearly.

These reports provide a detailed analysis of what is allowed in each Member State; however the regulatory landscape is evolving fast (notably with the upcoming entry into force of the new EMD). It was therefore decided, under the guidance of DG Ener, to complete and update the regulatory overview thanks to inputs provided by projects involved in BRIDGE.

3.2 Country fact sheets

BRIDGE projects participating in Action 2 from September 2024 onwards investigated the national regulations related to energy sharing in the countries where they have demonstrations. This led to the review of 15 countries. The result of this collective work is presented below in the form of “Country fact sheets”, and shows the highly diverse way energy sharing is regulated in those countries.

Austria	
Project in charge of the review	LocalRES, PARMENIDES, ODEON
Names of contributors	Bernadette Fina (AIT, LocalRES project), Carolin Monsberger (AIT, PARMENIDES project), Andreas Tuerk (Joanneum Research, ODEON Project)
Main relevant regulatory texts	Electricity Industry and Organisation Act and Renewable Energy Expansion Act (July 2021)
Status	In force
Types of energy sharing models that are allowed	In Austria, energy sharing (collective self-consumption) is enabled through energy communities (renewable and citizen energy communities. It cannot be done through P2P trading or contractual agreements yet. Energy sharing in multi-apartment buildings has also been allowed since 2017.
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	GEAs (Community Generation Plants) have been allowed in Austria since 2017 thanks to a change in the Electricity Act (ElWOG). They allow for behind-the-meter electricity exchange – i.e. no use of the public grid – for e.g. multi-apartment buildings. REC: Must be connected via the low-voltage grid (local area) or the medium-voltage grid (regional area) in the concession area of a grid operator. Members: citizens, municipalities, legal entities under public law, small and medium businesses. CEC: Can share electricity Austria-wide. No restriction to members, but control over EC must lie with natural persons, municipalities or small enterprises (no electricity suppliers).
Role of system operator (registration and data related)	The DSOs allocate energy within the EC based on a static or dynamic allocation key, which the EC can choose. The DSO then needs to provide according data (e.g. total load, total generation, energy purchased from the EC, energy sold to the EC). The data is provided via an official data platform named EDA.
Registration processes with system operator (or with dedicated agency)	Grid operators must be informed about the establishment of an EC: the EC needs to tell the DSO which participants are part of the community, their corresponding metering numbers, which allocation key should be used, etc. The EC has to make a contract with the DSO and each participant of the community also has to sign an additional agreement with the DSO so that all data can be properly processed.
Does the regulation impose/ allow the energy sharing organiser (ESO)	The regulation does not impose an ESO. The DSO is responsible for the “energy sharing” within the EC by allocating energy based on static or dynamic allocation third parties can support energy communities, for instance to take care of the billing since this can be a difficult part if a lot of members are involved.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Retail suppliers are responsible for the balancing and billing of the residual electricity demand. Supplier basically not engaged with ECs. Instead of covering an end customer’s total load, they now just cover the residual load. Or instead of purchasing the total generation (after self-consumption), they just buy the surplus energy (after EC consumption) from the individual participants with a generation unit.

Data management rules and procedures - who needs to do what with which data?	Large Great responsibility lies with the DSOs, who are obliged to do the 15 min electricity allocation for the ECs and provide according data
Information tools to incrasee awareness and understanding	One stop shop "Koordinationsstelle für Energiegemeinschaften"
Barriers to increase financial benefits and limit costs	The definition of static or dynamic allocation key/coefficient by the EC and the ex-post allocation of energy by the DSO hampers the optimisation of energy sharing. DSOs do not officially have a solution for integrating community storage. Large companies are excluded for RECs and cannot have a control function in CECs either.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Exemption from levies such as the renewable promotion contribution (EAG §75 (5)) and the electricity surcharge Grid Fees: - 57% grid usage fee reduction for local RECs within the LV grid - For regional RECs 28% within the LV grid /64% for within the MV grid Note: no grid tariffs are applied for GEAs since the public grid is not used.
Consumer rights & responsibilities	Freedom to choose residual supplier remains for each participant; EC can agree on static or dynamic allocation key; no balancing responsibility since each EC participant also belongs to a balancing group through its residual supplier.
Settlement period	15 min
Energy sharing coefficients	Ex-post allocation by DSO. Static/dynamic allocation key/coefficient can be defined by each EC individually and must be communicated to DSO. Static: fixed share of available generation for all participants. E.g. EC with 10 members, they agree on static allocation of 10% each. This means that each of them is entitled to receive 1/10 of the available generation at all time steps. Dynamic allocation: different at each time step: higher loads get allocated higher shares of available generation. While the Austrian law allows for any dynamic sharing key, the DSOs only accept the above mentioned one.

Belgium (Brussels Region)

Project in charge of the review	FEDECOM
Names of contributors	Quentin Donnette (SmartEN, FEDECOM project)
Main relevant regulatory texts	19 JUILLET 2001. – Ordonnance relative à l'organisation du marché de l'électricité en Région de Bruxelles-Capitale
Status	In force (updated 20/10/2022)

Types of energy sharing models that are allowed	In Brussels Region, three types of energy sharing models are implemented : - Peer-to-peer sharing (between two prosumers) - Exchange within the same building - In an energy community
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Some distinctions are drawn depending on the capacity: 1) Customers connected to the low voltage network with a capacity inferior or equal to 56 kVA 2) Customers connected to the low voltage network with a capacity superior to 56 kVA 3) Customers connected to the middle voltage network (managed by the Belgian TSO ELIA) More sub-categories are depending on the location of energy exchange - Type A: Participants in the energy-sharing scheme and the generation sources are located in the same building - Type B: Under common LV transformer cabin - Type C: Under a common substation managed by the TSO - Type D: under different substations managed by the TSO The electricity exchanged must come from a renewable source. Participants must have a smart meter installed.
Role of system operator (registration and data related)	The smart meter roll-out in Brussels Region is still beginning. If a customer expresses interest in joining an energy-sharing scheme, the DSO (Sibelga) will install a smart meter for free. Once the energy scheme is valid (signing of a contract and appointment of a single point of contact who is responsible for invoicing the various participants), the DSO is notified. The DSO provides the single point of contact with all the necessary information each month (an Excel file showing the volumes shared (kWh) and the network charges. Network charges can be paid either quarterly or once a year. The single point of contact will receive an invoice for network charges from the DSO.

Registration processes with system operator (or with dedicated agency)	*- For peer-to-peer exchange :* The customer who owns the injection point (or the third party they designate) will be the DSO single point of contact and must notify the DSO. An agreement must be signed between the two customers to regulate the sharing arrangements. There is no need to create a legal entity to organise the sharing but you can delegate sharing management (data processing, billing, etc.) to a third party, without this third party being considered an active customer. *- Under a same building :* The customer who owns the injection point (or the third party they designate) will be the DSO single point of contact and must notify the DSO. If there are several producers, they designate a single point of contact. An agreement is signed between the customers to regulate the sharing arrangements. There is no need to create a legal entity to organise the sharing but you can delegate sharing management (data processing, billing, etc.) to a third party, without this third party being considered an active customer. *- Energy Sharing in a community:* An energy community can be a CEC, a REC, or a Local Energy Community (LEC). LECs are similar in structure to a RECs except that production units can be owned by either the community (as for a REC) or by one of its members, or holder of the right to use it. The Regulator of Brussels region (Brugel) needs to approve an energy community before it becomes active. The authorisation is valid for 10 years and can be renewed. The community communicates with Sibelga via one of its members, the Single Point of Contact and must notify the DSO. An agreement is signed between the community and the participants to regulate the sharing arrangements.
Does the regulation impose/ allow the energy sharing organiser (ESO)	The regulation recognises the energy sharing organiser role. However, it is not mandatory.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	The electricity retailer is not engaged in the process of energy sharing. The DSO will be in contact with the suppliers to reduce the volume consumed through the energy sharing scheme from the energy supplier invoice
Data management rules and procedures - who needs to do what with which data?	
Information tools to increase awareness and understanding	Creation of a public counselling service called "Facilitateur Partage et Communautés d'énergie"
Barriers to increase financial benefits and limit costs	Large companies are excluded from every type of energy sharing in Brussels Region.

Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	The price of energy can freely be set. - There is a reduced network tariff depending on the location of exchange
Consumer rights & responsibilities	Freedom to choose sharing keys (explained below)
Settlement period	15 min
Energy sharing coefficients	In Brussels region, 3 distribution methods are available: *1) The fixed distribution method* This first type of distribution involves distributing the available injection for each quarter-hour period in question according to a fixed percentage. In other words, each participant is entitled to a constant (or fixed) share of the injection defined in advance. It is further divided in two categories: a) Fixed distribution with a single distribution round: In the case of a single distribution round, the total injection for the quarter-hour period will be divided between the participants only once. b) Fixed distribution with multiple distribution rounds: The remaining injection will again be divided between the customers with consumption remaining. The rounds continue until all the injection has been distributed, or all the consumption is covered, within a quarter of an hour. *2) The pro-rata distribution method* It defines the share of the injection that each consumer will receive, in proportion to the individual consumption for each quarter-hour period. This means that the injection that consumers receive will depend on the size of their individual consumption in relation to the total consumption of all participants in the sharing project (in a given quarter of an hour). It allows all the injection available to be distributed in a single round *3) The hybrid distribution method* It is based on two distribution rounds. The first is a fixed distribution round, and the second a distribution round in proportion to the consumption.

Belgium (Flanders)	
Project in charge of the review	EU-Dream
Names of contributors	Janka Vanschoenwinkel (VITO) and Luciana Marques (VITO)
Main relevant regulatory texts	https://codex.vlaanderen.be/Zoeken/Document.aspx?DID=1018092&param=inhoud
Status	In force

Types of energy sharing models that are allowed	Community sharing, peer-to-peer sharing, third party organised sharing
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	For energy communities: Almost literal copy paste from the EU regulation. It is still very open and there are not many barriers to participation. Geographical perimeter is only required for REC, but it is not mentioned how it should be filled in. It is up to the community to specify what a geographical perimeter is. The energy sharing is only possible within Flanders (not with other regions in Belgium). Within Flanders, it does not matter where individuals are located. For REC, the regulation does specify that proximity is required (see above).
Role of system operator (registration and data related)	Digital platform of the DSO (myfluvius.be) where community managers should register members. The DSO is the data operator, data measurement, calculation of energy sharing volumes, communication to energy suppliers.
Registration processes with system operator (or with dedicated agency)	The process is set up by the DSO (Fluvius) Energy communities have to register with the DSO. Citizens' energy communities and renewable energy communities must also apply to the VREG (the independent authority of the Flemish energy market).
Does the regulation impose/ allow the energy sharing organiser (ESO)	Each community has a community manager. So they can take up this role. The regulation itself does not specify this role separately.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	The role of retail supplier does not change compared to the BAU. They receive the data from the system operator and they continue their usual billing, collecting of tariffs and taxes. Of course, the result is different in case of energy sharing as the data that the supplier receives from the system operator now contains also the energy sharing results. As a result, in the billing, the energy sharing result should be captured by the retail supplier. Fluvius informs the suppliers of the individuals that are sharing energy. They adapt it in their invoicing. However, the individuals among themselves have to set up a separate invoicing system that fits their agreed upon prices. For instance: house 1 and house 2 share electricity (e.g., 1 kWh from house 1 PV to house 2). House 2's supplier knows that it doesn't have to pay 1 kWh to its supplier, deducting it from the invoice. So house 2 pays for 1 kWh less (to the supplier). Instead, house 2 gives house 1 an agreed amount (in euros) for this kWh, using the payment method of choice of the agreed parties. House 1's supplier, on the other hand, does not pay it for the 1 kWh that it injected into the grid.
Data management rules and procedures – who needs to do what with which data?	These responsibilities lie with the DSO.

Information tools to increase awareness and understanding	Organised internally by the community itself. Digital meter data are visualised through the myfluvius.be platform. However, there is no specific visualisation for energy sharing data.
Barriers to increase financial benefits and limit costs	Energy sharing makes use of the public distribution grid and therefore has to pay the taxes and grid tariffs. This is a significant barrier in terms of profitability. In addition, energy suppliers charge additional costs per metre that is sharing energy (can go up to 150 euros per metre!). It is also fair to say that energy suppliers indeed have more costs when their consumers enter energy sharing arrangements (especially related to the question of transfer of energy). Take an example of house 1 providing 1 kWh to house 2. House 2's supplier does supply it with 1 kWh, but cannot charge house 2. House 1's supplier does balance the 1 kWh in its portfolio. Moreover, both suppliers have to adapt their invoices (and the work is heavier at the beginning, without an automated system). As such, energy suppliers try to discourage energy sharing because there is no business for them in it (only costs). Because the energy system needs to move forward, the Clean Energy Package (CEP) is focusing on democratisation and decentralisation, which includes tackling the matter of conservative energy suppliers.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	None
Consumer rights & responsibilities	Freedom to choose supplier. Sharing key is chosen by the community manager and in addition there is only a limited number sharing keys to choose from. Fluvius by standard only sets one.
Settlement period	15 min
Energy sharing coefficients	Ex-ante. Fluvius sets up energy distribution key (the amount of energy allocated to each individual). Community manager choses one of the standard approaches. Fluvius has a couple of standard (most common) distribution keys. When an individual registers, they can choose one of those. The advantage is that the keys are already implemented and in most of the cases, people choose the same key. If someone wants something entirely different, it might be possible to have a new key made by Fluvius.

Czechia	
Project in charge of the review	-
Names of contributors	Ondrej Cerny (E.DSO)

Main relevant regulatory texts	Energy Act - Zákon o podmínkách podnikání a o výkonu státní správy v energetických odvětvích a o změně některých zákonů (energetický zákon) 458/2000 - The latest 2 updates provide regulatory framework for energy sharing, flexibility, aggregation and energy storage
Status	A provisional framework for energy sharing has been in place since August 2024. A broader framework for energy sharing will come into force in August 2026.
Types of energy sharing models that are allowed	Energy sharing as an accounting operation in the settlement phase
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Energy sharing must occur in the same 15-minute time period. Spatial limitations: - Between active consumers: o anywhere on the territory of Czechia (max 11 participants) o within the same building (max 1000 participants) - Energy communities: on a connected territory of maximum 3 municipalities, or on the territory of the capital city of Prague Limit on participants in energy sharing for energy communities: during the provisional phase (until August 2026), only 1000 participants within a community.
Role of system operator (registration and data related)	Installs devices for continuous metering for those wishing to participate in energy sharing. Provides metering data to the Energy Data-sharing Centre (EDC)
Registration processes with system operator (or with dedicated agency)	Active consumers wishing to participate in energy sharing have to register with the EDC. Grid operators and energy suppliers have to provide the necessary data to EDC as well. Energy communities also have to register with the National Regulatory Authority (ERÚ).
Does the regulation impose/ allow the energy sharing organiser (ESO)	Yes
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Suppliers provide settlement of the shared energy. Compensation for the shared energy is up to the participating parties.
Data management rules and procedures – who needs to do what with which data?	The data for energy sharing are managed through a central system – EDC, which is jointly owned by the TSO and the three largest DSOs in the country (connecting almost all consumers). The role of EDC is defined in the Energy Act. The grid operators, energy suppliers and the participants in energy sharing all exchange data through the EDC.

Information tools to increase awareness and understanding	Information about energy sharing is available at the websites of the EDC, the National Regulatory Authority, as well as on websites of larger energy suppliers.
Barriers to increase financial benefits and limit costs	Not clear yet as the framework is in early days of implementation. Paying grid fees for energy sharing can be an issue, since the regulated part of energy prices in Czechia is relatively high.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Energy sharing behind a single metering point (without using the network): no grid fees are applied. Energy suppliers are banned from offering different contract conditions to active consumers.
Consumer rights & responsibilities	
Settlement period	15 min
Energy sharing coefficients	Static sequential allocation model

Denmark	
Project in charge of the review	EU-DREAM
Names of contributors	Juan C. Vasquez (University of Aalborg)
Main relevant regulatory texts	The main laws regulating energy communities are the law on promotion of renewables (lov om fremme af vedvarende energi) and the law on electricity supply (elforsyningsloven). Renewable energy communities (RECs) were included into the law on promotion of renewables in 2021, and the definitions of both RECs and citizen energy communities (CECs) were set in an executive order added to the law on electricity supply.
Status	
Types of energy sharing models that are allowed	Regulations on energy sharing permit electricity sharing within a single building, such as a housing cooperative, but electricity sharing outside of a building is only possible through the collective grid and is subject to general tariffs and taxes.

Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Energy communities can be organised as associations, partnerships, cooperatives or capital companies.
Role of system operator (registration and data related)	
Registration processes with system operator (or with dedicated agency)	The main public bodies regulating and supervising the Danish energy market are the Danish Energy Agency (DEA) and the Danish Utility Regulator (DUR), both answering to the Ministry of Climate, Energy and Utilities. The DEA has the main responsibility for tasks linked to energy production, supply, and consumption, while DUR is responsible for securing consumer interests in the utility sectors.
Does the regulation impose/ allow the energy sharing organiser (ESO)	
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	
Data management rules and procedures – who needs to do what with which data?	
Information tools to increase awareness and understanding	
Barriers to increase financial benefits and limit costs	Legal and practical barriers still exist, such as the restriction on CECs and RECs from operating their own distribution networks. Electricity sharing through the collective grid remains subject to tariffs and taxes, though new tariff models and incentives are being assessed.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	In August 2022, an executive order on subsidies for local energy communities and local anchoring of the climate transition was passed. The DEA issues grants for projects developing renewable energy projects by local communities.
Consumer rights & responsibilities	

Settlement period	
Energy sharing coefficients	

Finland	
Project in charge of the review	SENDER
Names of contributors	Wilhelm Süßenbacher, Aro Matti
Main relevant regulatory texts	Decree on Settlement and Metering of Electricity Delivery 767/2021
Status	In force
Types of energy sharing models that are allowed	Local energy communities and provisions for settlement and metering of their electricity deliveries are set out in § 3 Government Decree on Settlement and Metering of Electricity Deliveries. Concerning whether there is national legislation preventing final customers from selling their self-generated electricity to other consumers and not to a supplier, there is currently no specific legislation nor draft legislation preventing final customers from selling their self-generated electricity to other consumers. However, the absence of clear rules may impact the interest in peer-to-peer trading. Overall, the Finnish legislation does not explicitly forbid P2P trading. However, a firm legal framework is not in place.
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Participants in the energy-sharing scheme need to have same retailer (open supplier). To avoid DSO cost and taxes, participants need to be located inside one property, with an exception of neighbouring property feeding PV production to its neighbour.
Role of system operator (registration and data related)	Active customers must register for the purpose of clearing the electricity supply to the distribution system operator responsible for the electricity metering of the active customer group.
Registration processes with system operator (or with dedicated agency)	Active customers must register for the purpose of clearing the electricity supply to the distribution system operator responsible for the electricity metering of the active customer group
Does the regulation impose/ allow the energy sharing organiser (ESO)	Currently, no provisions prohibit or limit the possibilities of delegation of management of installations to a third party by active customers. Also, there are no fees or levies that self-generating consumers must pay, and no approval from the NRA is required.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Many retail suppliers offer services for energy communities, for example net billing but they are not mandated to provide these services.

Data management rules and procedures – who needs to do what with which data?	Local energy community can be metered by local DSO or by sub-metering by the community members. If it's done by DSO, then DSO completes the net billing based on data from the centralised datahub.
Information tools to increase awareness and understanding	https://www.motiva.fi/ratkaisut/energiayhteisot/energiayhteisomallit
Barriers to increase financial benefits and limit costs	
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	In Finland, the national tariff structure does not allow for dynamic network tariffs. However, the Electricity Market Act generally requires network tariffs to be unbiased and non-discriminatory to all network users. Furthermore, the pricing of network services must be reasonable (Chapter 4 §24 Electricity Market Act). Concerning this, the national NRA has overseen the adequacy in four-year intervals. The NRA determines the principles by which the network tariffs must be calculated for each interval.
Consumer rights & responsibilities	Participation in and resigning from an energy community is voluntary.
Settlement period	15 min where new smart meters, 1 hour where old smart meters
Energy sharing coefficients	Energy sharing coefficients are set ex ante and they are static, but the static sharing model can be changed, meaning that they are set in advance, but the sharing model can change if wanted by the community members.

France	
Project in charge of the review	ODEON
Names of contributors	C. DUFOUR and N.CASTERAS
Main relevant regulatory texts	Energy code: law 2023-175 March 10, 2023 Decree of 21 November 2019 setting the geographical proximity criterion for extended collective self-consumption. Decree of 21 February 2025 amending the decree of 21 November 2019.
Status	In force law 2023-175 adopted March 10, 2023,+ decrees 2019 and 2025
Types of energy sharing models that are allowed	Collective self-consumption Third party organised sharing energy sharing is also enabled through energy communities.
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Maximum 2 km between participants of energy sharing group. Maximum of 5 MW production (since March 2025, it was 3 MW before) for all producers of the energy community. A derogation up to a maximum of 20 km can be applied on country side municipalities (it has to be granted by the Ministry in charge of energy). An exception to the 2 km limit is also granted to projects led by administrative entities grouping several cities or villages, and involving only public or private bodies carrying out a public service mission (in that case max of 10 MW)

Role of system operator (registration and data related)	Role of DSO: Registration, data collection of smart meter, billing of DSO taxes
Registration processes with system operator (or with dedicated agency)	Collection of administrative data for energy-sharing community in compliance with decree. Registration of energy sharing community at the Energy Ministry. The energy sharing community and the DSO have to conclude a contract (a template is available on Enedis website)
Does the regulation impose/ allow the energy sharing organiser (ESO)	A kind of Energy Sharing Organiser (Personne Morale Organisatrice – PMO in French) is imposed
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Based on smart meter data sent by DSO, the retail supplier is responsible of billing the delivered energy resulting from local production, collecting network tariffs and taxes
Data management rules and procedures – who needs to do what with which data?	DSO is responsible of smart meter data collection. It is necessary for participants to have a smart meter and accept load curve collection. The DSO then sends meter data to retail supplier and the energy-sharing community producer.
Information tools to increase awareness and understanding	The PMO is responsible to coordinate ESC participant
Barriers to increase financial benefits and limit costs	Lack of flexible technologies to completely optimise the energy sharing scheme
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Possibility for a subsidised tariff of surplus energy produced
Consumer rights & responsibilities	Energy sharing participants can keep their existing retailer. The PMO defines the sharing key
Settlement period	15 min since October 2024 (was 30 min before)

Energy sharing coefficients	The PMO define the sharing keys, 3 types are possible: • constant (example: customer 1: 25%, customer 2: 35%, customer 3: 40%) ; • dynamic (different for each load curve measurement step) ; • default dynamic, or pro-rata, calculated automatically by Enedis in proportion to consumption on each load curve measurement step. The default dynamic sharing key has some disadvantages. As the allocation is made in proportion to consumption, it is the sites that consume the most that will be favoured. For example, in an operation involving an industrial customer and several private customers, the industrial customer will have a higher consumption, so the consumers are likely to be allocated very little local electricity. In collective self-consumption operations with very different consumption profiles, it may be more interesting to set up other distribution keys, otherwise private individuals will not see the point of taking part in the operation. Since 2023, Enedis has been able to integrate, through an API, full dynamic sharing keys. These sharing keys must be calculated by a professional, with dedicated software, that allow the energy sharing scheme to be optimised. With the 'full dynamic' allocation key, it is possible to allocate production by producer/consumer pair. In other words, each producer of the same operation can choose its own order of priority towards consumers. For example, an operation may have two producers: the local authority, which gives priority to its own buildings, and the private producer, who prioritises according to local electricity purchase prices. Another application: this key can also be used to direct surplus production to the point of production that has the best electricity purchase contract. This optimises the overall profitability of the operation.

Germany	
Project in charge of the review	PEDvolution
Names of contributors	Gerhard Meindl (SWW), Evyatar Littwitz (ESG)
Main relevant regulatory texts	German Renewable Energy Act: https://www.gesetze-im-internet.de/eeg_2014/ German Energy Industry Act: https://www.gesetze-im-internet.de/enwg_2005/ with planned revision for shared use of electrical energy from plants for the generation of electricity from renewable energies German Building Energy Act: https://www.gesetze-im-internet.de/geg/ German Electric Grid Access Ordinance: https://www.gesetze-im-internet.de/stromnzv/ German Basic Electricity Supply Ordinance: https://www.gesetze-im-internet.de/stromgvv/
Status	In November 2014, a legislative proposal for amending the Energy Industry Act enabling energy sharing via the public grid is under examination (expected to come into force in June 2026).

Types of energy sharing models that are allowed	Energy sharing without using the public grid for tenant electricity and shared building supply.
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Power plant operators; consumers are allowed to participate for their own consumption, except for big companies. Supply will be carried out using public grid, whereas contracts between the local DSO and end consumers within the same balancing area are expected to be made. (from June 2028 sharing agreements with neighbouring balancing area will be allowed).
Role of system operator (registration and data related)	System operators will be responsible for grid balancing of shared power volumes. However, they may use third parties to take charge of different technical and market-related processes
Registration processes with system operator (or with dedicated agency)	The framework is still under development, and revision processes and registration processes are yet to be established.
Does the regulation impose/ allow the energy sharing organiser (ESO)	Third parties may be used and are expected to support system operators and consumers in implementing energy sharing by offering services such as automated matching platforms, legal assistance for contracts, supplier obligation management, balancing group responsibility, billing and innovative solutions like virtual balancing groups.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Since consumers must maintain a residual electricity contract, suppliers can differentiate pricing beyond standard tariffs. Retail suppliers are responsible for designing competitive and profitable pricing strategies, managing price risks, and developing accurate forecasts for residual electricity procurement, as traditional load profiles are insufficient. In addition, retail suppliers may also provide platforms for matching producers with consumers, while offering legal assistance for contract formation and managing balancing, billing and surplus electricity marketing.
Data management rules and procedures – who needs to do what with which data?	As the framework is still under development and revision processes, data management procedures are yet to be established.
Information tools to increase awareness and understanding	Standardised pre-contractual information, labelling obligations and online price comparison tools are necessary to help consumers understand energy sharing and its financial impact. Smart meters can provide real-time consumption data but are currently only installed in around 3% of German households.

Barriers to increase financial benefits and limit costs	Energy sharing participants in Germany will have to pay electricity taxes, levies, and transmission fees, making community-generated electricity as expensive as or even more costly than standard market electricity. The classification of energy-sharing participants as electricity traders further increases administrative and financial burdens, particularly for small cooperatives.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Community energy sharing is subject to full taxes and levies, increasing costs for participants. Cooperatives and citizen energy groups are calling for a reduction in electricity tax and transmission fees to improve the financial viability of energy sharing.
Consumer rights & responsibilities	EU law mandates non-discriminatory treatment of renewable energy collectives, but Germany's regulations do not currently allow energy sharing through the public grid. Energy-sharing participants are responsible for complying with trader regulations, including tax obligations and administrative processes.
Settlement period	Energy sharing requires proving simultaneous generation and consumption, typically measured at 15-minute intervals. The draft law references intelligent metering systems as a potential solution for tracking these transactions accurately.
Energy sharing coefficients	The financial viability of energy sharing depends on the sharing coefficient, which determines how available kilowatt-hours are allocated among participants. Without favourable allocation rules, shared energy could be more expensive than traditional market electricity, reducing participation incentives.

Ireland	
Project in charge of the review	ODEON
Names of contributors	Avril Ní Shearcaigh, Stephanie Brennan
Main relevant regulatory texts	https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/Clean_Export_Guarantee-Enduring_Arrangements_to_Remunerate_Customers_for_Microgenerati.pdf
Status	Energy sharing regulation is still in discussion, no final regulation available or date for adoption for energy sharing legislation available. Some public consultations have taken place. Feed in tariff legislation came into effect on 15/02/2022
Types of energy sharing models that are allowed	Only payment from energy supplier for surplus fed to the grid whether it be from a private householder or REC

Participation criteria	Proximity requirements for renewable energy communities
Role of system operator	
Registration processes with system operator	
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Responsible for billing and microgeneration payments for surplus energy exported
Data management rules and procedures – who needs to do what with which data?	DSO provides readings and measurements and communicates to the retail supplier and they communicate it to the consumer
Information tools to increase awareness and understanding	For community RE projects https://www.seai.ie/plan-your-energy-journey/for-your-community/enabling-framework
Barriers to increase financial benefits and limit costs	For private installations – the cost is a barrier to homeowners as not all have the means to invest. For community scale projects, planning is a huge barrier but also the expense of the preplanning stages and reports needed without any guaranteed project at the end.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Feed in Tariff for private microgeneration. RESS and SRESS schemes guarantee a specific price for energy from RE generators. There are special allowances made for community projects to participate in this scheme, such as not requiring planning permission before securing a grid connection assessment. https://www.gov.ie/en/press-release/009ce-minister-ryan-announces-launch-of-the-second-phase-of-the-small-scale-renewable-electricity-support-scheme-sress/ updated information on SRESS here-https://www.gov.ie/en/publication/96110-small-scale-generation/#small-scale-renewable-electricity-support-scheme-sress and RESS here- https://www.gov.ie/en/consultation/17797-consultation-on-terms-and-conditions-for-the-fifth-competition-under-the-renewable-electricity-support-scheme-ress-5/
Consumer rights & responsibilities	
Settlement period	
Energy sharing coefficients	

Italy	
Project in charge of the review	LocalRES
Names of contributors	Emilio Ghiani (University of Cagliari), Sara Ruffini (R2M)
Main relevant regulatory texts	Legislative Decree No. 199 of 8 November 2021. TIAD: Arera Resolution 727/2022 (December 2022) CACER Decree 414/2023 (December 2023) Arera Resolution 15/2024 (January 2024) GSE Operative Rules (23 February 2024)
Status	Adopted, entered into force 15/12/2021
Types of energy sharing models that are allowed	Energy sharing in a same building (condominium) Energy sharing in a REC
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	For CSC: same building For REC: same MV/LV power substation. Max 1MW generation capacity under same primary cabin (high voltage/medium voltage) to get incentives. Min. 1 prosumer and 1 consumer, no max
Role of system operator (registration and data related)	The local DSO ensures the connection of production and consumption unit, implementing regulatory measures, operating the distribution network in a secure and stable manner. The principal authority responsible for the actual qualification of REC is the GSE (Gestore dei Servizi Energetici) which is responsible for the administrative side and collection of data from DSOs.
Registration processes with system operator (or with dedicated agency)	Authorisation procedure is handled by Gestore dei Servizi Energetici (GSE), which provides comprehensive guidelines on establishing and managing energy communities. These rules outline the criteria for eligible participants, technical requirements for energy production, and procedures for energy sharing and incentives.
Does the regulation impose/ allow the energy sharing organiser (ESO)	The community is represented by one the producers. Third-party ownership of assets is allowed but in that case all benefits and feed-in are subject to taxation and VAT

Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Retail suppliers are responsible for: • collecting and managing data related to energy consumption and production of end users • billing (taxes and network fees included) • intermediation between final users and network managers
Data management rules and procedures – who needs to do what with which data?	DSOs are responsible for reading and validating data from smart meters. Data collected by the DSOs are provided to suppliers and the GSE. The GSE finally calculates shared energy and communicate results to the respective energy community.
Information tools to increase awareness and understanding	The GSE has developed an extensive informative set for final users to disseminate benefits achievable via diffused self-consumption: https://www.gse.it/servizi-per-te/autoconsumo/gruppi-di-autoconsumatori-e-comunita-di-energia-rinnovabile/comunit%C3%A0-energetiche-rinnovabili
Barriers to increase financial benefits and limit costs	The surplus energy produced is released into the grid (for which they receive a compensation in the form of "cash-back") but they cannot sell it, hence limited benefits. If an energy company owns the PV asset, all benefits and feed-in are subject to taxation and VAT
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Incentive on surplus fed to the grid (feed-in tariff) Discount on grid fees If the ownership remain to REC or the Condo, the shared energy is not under taxation / VAT free Apportionment of benefits achieved by the community is the object of a private contract signed by the member of the community. The REC is responsible for the management and apportionment of incentives issued by the GSE.
Consumer rights & responsibilities	Energy sharing participants can keep their existing retailer.
Settlement period	Usually 1 h for the compensation of the energy shared, in future 15 min
Energy sharing coefficients	Every customer can decide what share they'd like to get. Each condo or REC referent does the split himself based on rules defined between participants. The coefficients are not submitted to the DSO.

The Netherlands	
Project in charge of the review	ACCEPT

Names of contributors	Ries Verhoeven, Laura Bordo
Main relevant regulatory texts	Energie wet
Status	Adopted December 2024, the Act is scheduled to come into effect on April 1, 2025.
Types of energy sharing models that are allowed	Energy sharing by active customers (P2P) or by an energy community: An active customer or connected party within an energy community has the right to share energy if: a. the active customer or energy community enters into an energy-sharing agreement with a supplier offering energy sharing; b. any active customer or connected party within the energy community has a supply or feed-in agreement supplier referred to in the point (a) c. each active customer or connected party within the energy community has a metering device whose communication functionality is used; and d. the electricity is shared per imbalance settlement period The legally described activities of an energy community include all activities related to energy, including heat. “Heat communities” will be defined in another Act
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	No geographical perimeter yet. Possibility in law by ministerial decision.
Role of system operator (registration and data related)	The DSO is responsible for: Facilitating energy sharing and peer-to-peer transactions while ensuring compliance with market rules Managing and processing energy measurement data, including smart meters
Registration processes with system operator (or with dedicated agency)	Energy communities must register with the Dutch Authority for Consumers & Markets if they engage in electricity supply beyond their own members. Grid connection and metering agreements must be established with the distribution system operator. The community must comply with data-sharing regulations to ensure transparency in energy transactions
Does the regulation impose/ allow the energy sharing organiser (ESO)	Not yet. The implementation of the EMD is not yet complete.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	The primary retail supplier is responsible for billing, collecting network tariffs and taxes

Data management rules and procedures – who needs to do what with which data?	DSO's and MMF BASS Dutch organisation for energy data management
Information tools to increase awareness and understanding	Non-existent for now
Barriers to increase financial benefits and limit costs	A fully functional framework (with corresponding ministerial regulation) remains to be developed
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Not currently
Consumer rights & responsibilities	No freedom to choose supplier. Will be possible with implementation of the EMD
Settlement period	
Energy sharing coefficients	The Act does not explicitly mention energy sharing coefficients, but it does outline mechanisms for peer-to-peer energy trading and energy communities, including rules for aggregating and distributing energy among participants

Portugal	
Project in charge of the review	U2DEMO and WEForming
Names of contributors	Gonçalo Glória (RDN) and Ângelo Casaleiro (RDN)

Main relevant regulatory texts	Decree-Law N.º 162/2019–- Establishes new rules applicable to electricity production from renewable sources for individual and collective self-consumption, as well as production by renewable energy communities (RECs), partially transposing Directive 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources into national law Decree-Law N.º 15/2022 – Establishes the organisation and operation of the National Electric System, transposing Directive (EU) 2019/944 and Directive (EU) 2018/2001. Represents a significant evolution compared to the previous legal framework, especially with regard to promoting the energy transition and the active participation of all network users. This law incorporated and repealed the regime for self-consumption of renewable energy established by Decree-Law no. 162/2019, introducing significant changes Decree-Law N.º 99/2024 – Amends the regulatory framework applicable to renewable energy
Status	In force (main regulatory text updated 14/01/2022)
Types of energy sharing models that are allowed	Energy sharing (collective self-consumption) is enabled through energy communities (renewable and citizen energy communities). It cannot be done through P2P trading or contractual agreements yet.
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	GEOGRAPHICAL CRITERIA -For RECs: members or participants are located in the vicinity of the renewable energy projects or carry out activities related to the renewable energy projects of the respective energy community, necessarily including UPACs (as per art. 189(1)(a)). -For JARSCs: the requirement of "proximity" between the UPAC and the UI(s) is understood to cover the UPAC and UI(s) connected by direct line or internal network or, when operating through the RESP at the different voltage levels, provided that conditions set by art. 83 are fulfilled: a) When, in the case of UPACs connected to LV electricity distribution networks, the UI and the UPAC are not more than 2 km apart geographically or, alternatively, are connected to the same transformer substation; or b) They are connected to the same substation, in the case of UPACs connected to the RND and the RNT, provided that the geographical distance between the UPAC and the UI of 4 km in the case of MV connections, 10 km in the case of HV connections and 20 km in the case of EHV connections is not exceeded. In addition to the above cases, the proximity relationship may also be assessed on a case-by-case basis by the DGEG, taking into account the relevant technical elements, as well as energy optimisation criteria, within the scope of the provision of essential public services or the development of territorial strategies at municipal or regional level. TEMPORAL CONSTRAINTS For all energy sharing, as per ERSE Regulation 815/2023, art 28(7), self-consumption energy sharing using the public grid is calculated every 15 minutes. Moreover, according to ERSE Reg. art. 3(2)(i), "energy balance" is defined as the difference between consumption and injection energy in each 15-minute period, calculated on the basis of data from each measuring device CAPACITY CONSTRAINTS

	Generation and autonomous electricity storage installations with a capacity above 1 MW must obtain a production and operating licence as per Decree-Law no. 15/2022, art 11(2)(b)-(c) Electricity generation installations of a capacity between 30 kW and 1 MW are subject to prior registration and an operating certificate as per Decree-Law no. 15/2022, art 11(3)(b) Autonomous electricity storage installations with a capacity below 1 MW are subject to prior registration and an operating certificate as per Decree-Law no. 15/2022, art 11(3)(c) Electricity generation installations with a capacity between 700 W and 30 kW are subject to prior notification as per Decree-Law no. 15/2022, art 11(4)(a).
Role of system operator (registration and data related)	The network operator shall make available: a) The information necessary for the correct invoicing of the different self-consumption players, under the terms of ERSE regulations; b) Information on the energy produced and not consumed in the time period defined in ERSE regulations, indicating the surplus injected into the grid by each self-consuming UI; c) The requirements and specifications necessary to have interoperability with the network operator's systems by making the necessary requirements available to interested parties.
Registration processes with system operator (or with dedicated agency)	Since in Portugal, energy sharing is possible within the frame of »Collective self-consumption, it applies: 1. Mandatory prior registration and exploitation certificate for self-consumption electricity generation with installed capacity above 30 kW and below 1 MW (Decree-Law 15/2022 artº 11(3)(b)). 2. Prior notification for self-consumption electricity generation with installed capacity above 700 W and below 30 kW (decree-law 15/2022 artº 11(4)(4)). Notifications to/certificate emission, competence DGEG, according to decree-law 15/2022 artº 12(1).
Does the regulation impose/ allow the energy sharing organiser (ESO)	The point of contact is the EGAC (collective self-consumption management entity), defined by art. 3 gg) of Decree-Law 15/2022 as "a natural or legal person, who may or may not be a self-consumer, appointed by collective self-consumers to carry out acts on their behalf". As per art. 86(2), self-consumers participating in ACC (activity in collective self-consumption) must designate the EGAC, which is responsible for carrying out the operational management of the current activity, including the management of the internal network, if any, liaising with the electronic platform provided for in art.15 (where the procedures for granting production and operating licences, for registering production units and for prior notification are carried out), liaising with the RESP (Public Service Electricity Network) and liaising with the respective operators, particularly with regard to sharing production and the

	respective coefficients, if applicable, the commercial relationship to be adopted for surpluses, as well as any others entrusted to it by the self-consumers.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	The supplier or aggregator with whom the self-consumer enters into a surplus contract must make available to all self-consumers the option of processing the billing of electricity under the terms of paragraph 11 of article 36 of the Value Added Tax Code (CIVA), approved in the annex to Decree-Law 394-B/84 of 26 December, in its current wording. In particular, the supplier or aggregator with whom the self-consumer enters into a surplus contract must make available to all self-consumers the option of invoicing for electricity under the terms of Article 36(11) of the Value Added Tax Code (CIVA) and it assumes the obligation to communicate the details of the invoices relating to the transaction of surplus energy produced for self-consumption. There are no constraints that prevent RECs and CECs from being the only suppliers to their members. According to Decree-Law no. 15/2022, art. 132(3), the activity of electricity supply is legally separated from the other activities of the SEN, without prejudice to the possibility of the supplier holding ownership rights over UPACs owned by self-consumers.
Data management rules and procedures – who needs to do what with which data?	The ORD validates the energy values or sharing coefficients communicated by the EGAC, as per the previous clause, and informs the EGAC of the validation result. This allows the EGAC to correct the data if necessary, with the ORD setting a maximum deadline for such corrections to ensure the monthly billing cycle for network access is processed with real measurement data and validated sharing. In each data provision period by the ORD, and until the EGAC's deadline for communicating the sharing coefficients, as stipulated in the previous clauses, the ORD performs a provisional energy sharing calculation based on a method that uses coefficients proportional to consumption. If the EGAC fails to communicate the shared energy values, the sharing coefficients, or provides invalid data by the deadline mentioned in clause 2, the ORD will finalise the energy sharing calculation based on the method that uses coefficients proportional to consumption. The ORD publishes on its website and keeps updated the model and format of the data to be communicated by the EGAC for the purpose of establishing the hierarchical structure and the sharing methods to be applied within each group and between groups.
Information tools to increase awareness and understanding	Decreto Lei 15/2022, imposes the installation of smart meters and smart grids. As per art. 95 (points 9 and 10), "in the ACC, remote metering with a smart meter is mandatory at the points where the UPAC interconnects with the RESP and each associated UI or with the internal network and each associated UI, unless there is a smart grid connection". Smart metering devices "must ensure that the energy consumed by customers who do not adhere to self-consumption is not counted as the total electrical energy consumed by the UPAC's self-consumers".
Barriers to increase financial benefits and limit costs	

Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Collective self-consumption (for both ECs and self-consumers) is incentivised by provisions related to network tariffs (Decree-Law no. 15/2022 art. 212). In particular, the CIEG charge (costs of energy policy, sustainability and general economic interest) corresponding to self-consumed electricity supplied by RESP may be deducted, in whole or in part, from network access tariffs by order of the member of the government responsible for the energy area, to be issued by 15 September of each year, after consulting ERSE. As regards tariffs applicable to storage facilities, art. 213 provides that: - They must reflect the costs caused to the networks as well as the costs avoided for the SEN, namely in terms of increasing the efficiency, resilience and flexibility of the RESP. - Storage facilities are subject to a single charge of the network use tariff for charging and injection in order to avoid double charging for stored electricity. - Storage facilities are exempt from paying the charges corresponding to the CIEG provided for in article 208, which are levied on the overall system use tariff.
Consumer rights & responsibilities	1 – The self-consumer has the right to: a) Install one or more UPAC (self-consumption production units); b) Establish and operate direct lines when there is no access to the public grid and establish and operate internal networks, in accordance with this decree-law; c) Establish, acquire, or operate RDF (renewable distributed facilities), as provided in this decree-law; d) Consume, in the IU (Consumption Unit) associated with the UPAC(s), the electricity produced or stored in their own facilities; e) Trade excess self-consumption energy through electricity markets, including organised markets, bilateral contracts, or peer-to-peer trading schemes, either directly or through third parties; f) Bear proportional and non-discriminatory tariffs and charges, which do not exceed the respective costs; g) Operate storage facilities, whether associated with the UPAC, the IU, or as standalone units, without being subject to any duplication of charges, including network access charges for stored electricity confined to their installations; h) Request the issuance of guarantees of origin for excess electricity produced by the UPAC and injected into the grid; i) Maintain their rights and obligations as an electricity consumer and self-consumer; j) Access the information available on the electronic platform mentioned in Article 15, reserved for self-consumers to monitor their energy production and consumption profile, and authorise third-party access to this data; k) Cease self-consumption activities. 2 – The self-consumer has the duty to: a) Obtain prior control authorisation as defined in this decree-law; b) Bear the cost of modifying the IU's connection to the RESP (Public Electricity Network), in accordance with applicable regulations; c) Bear, when applicable, the connection costs of UPAC to the RESP and specific dynamic management systems, as per applicable regulations; d) Pay the applicable tariffs whenever the RESP is used; e) Design the UPAC to ensure the closest possible match between the electricity produced and the electricity consumed, minimising surplus energy; f) Provide the legally designated entity responsible for supervising self-consumption activities with all requested information and technical data, including data on the electricity produced by UPAC;

	g) Allow and facilitate access to UPAC for technical personnel from the aforementioned supervisory entity, the aggregator, and the grid operator, within the scope of their respective duties, competencies, or contractually established rights; h) Ensure that installed production equipment is certified; i) Upon ceasing self-consumption activities, take the necessary steps to remove the UPAC, management systems, auxiliary equipment, and installations, if applicable.
Settlement period	15 min

Energy sharing coefficients	Parties (defined in Decree-Law no. 15/2022 as "IU-electrical installation for consumption") engaging in energy sharing (in the framework of Collective self-consumption) have flexibility in defining the energy sharing key as per Decree-Law no. 15/2022 Art. 87(2)(a)-(c). The energy sharing methods may be based on: a) fixed coefficients differentiated, among others, by week days and public holidays or weekends, which may or may not take into account seasonality (in accordance to ERSE Regulation 815/2023, Art. 29); b) variable coefficients defined on the basis of criteria, in hierarchisation, in the consumption measured in each time period, in accordance to ERSE Regulation 815/2023, Art. 31. c) combination of any of the modalities referred in point a) and b), under the terms of ERSE regulations. Additionally, energy sharing can also be carried out based on specific dynamic management systems, which enable real time monitoring, control and dynamic energy management to optimise energy flows (Decree-Law no. 15/2022 Art 87(3)), also in accordance to ERSE Regulation 815/2023, Art. 32. In the absence of notification from EGAC (Collective Self-Consumption Management Entity) to the grid operator, regarding the intended sharing method among the participating self-consumers IUs, the grid operator will proceed with a proportional distribution to each IU based on measured consumption during the time period, in accordance to ERSE Regulation 815/2023, Art. 30. Update 2025 – 4 options are now possible: • Fixed coefficient: The EGAC provides a fixed coefficient for each participating installation which can be differentiated over working days, public holidays, and weekends. The allocation is based on a fixed volume (kW) per participant in the EGAC. • Proportional coefficient: In this allocation method, the sharing mode is proportional to the consumption. The coefficient is calculated based on both consumption and the injection from generation assets within each 15-minute period. The DSO is responsible for applying the methodology for proportional allocation. Each participant receives a given percentage of the electricity generated by the assets. • Hierarchical allocation: This method allows the creation of sub-groups within an EGAC. Each sub-group can choose its own internal allocation key (either fixed or proportional). After the first round of energy sharing within a sub-group, any residual energy can be allocated to another sub-group in a second round. Once all rounds are completed, any remaining electricity is considered surplus. This approach enhances local self-balancing, enabling a multi-level allocation process (first at the street level, then at the neighbourhood level, and finally at the municipal level). This structure increases the resilience of the local energy system. • Dynamic coefficient: The dynamic coefficient provides information on the distribution of shared energy between each installation that injects electricity into the grid and each installation that receives electricity from the network. The EGAC must communicate the dynamic coefficient to the DSO before a specified deadline for the monthly billing. Failure to meet this deadline will result in the coefficient not being recognised for the monthly billing. In such cases, the proportional coefficient will be applied instead.

Slovenia

Project in charge of the review	Opentunity, PEDvolution

Names of contributors	Ursula Krisper (Elektro Ljubljana / Opentunity), Aleš Ažman (EG / PEDvolution)
Main relevant regulatory texts	The Energy Law (EZ-2), published in Official Gazette of the Republic of Slovenia, number 38/24, defines the energy communities: article number 19, the state and local communities establish structural conditions to empower citizens to participate in the transition to a climate-neutral society, both in terms of energy self-sufficiency and that the in citizens join to the energy communities. Furthermore, the Electricity Supply Act (ZOEE), published in the Official Gazette of the Republic of Slovenia, 172/21 - ZOEE123/22146/22, defines an energy community as a community of citizens that may be established by members connected to the distribution electricity grid in the Republic of Slovenia. Citizenship of the Republic of Slovenia is not a requirement for a membership in the energy community. Energy Agency of Slovenia recognises the P2P trading as one of the forms of "active consumption".
Status	In force
Types of energy sharing models that are allowed	In Slovenia, energy sharing (collective self-consumption) is enabled through energy communities (renewable and citizen energy communities) or through P2P trading or contractual agreements. Energy sharing in multi-apartment buildings has been active, since 2019.
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Two examples of trading platforms running in Slovenia: First supplier is Suncontract, https://suncontract.org/si/ . Suncontract is a blockchain-based P2P energy trading platform: The SunContract Marketplace offers a wide variety of features that make it an ideal place to buy and sell renewable energy (more than 10.000 registered customers within the EU – Slovenia). Customers can buy and sell energy directly with one another nationwide, in the absence of intermediaries. The energy sharing activities on the energy marketplace are all in compliance with the frameworks of existing legislation. A prosumer or consumer can make a direct price agreement with buyers and sellers on the SunContract Marketplace. It is obligatory that the entity belong to the entity responsible for the balance group , which is described in the Sunconctract. Second example of a supplier is https://www.bisol-energija.si/celostne-energetske-resitve. They offer a service of virtual communities, inside of which producers can offer their surpluses of energy and consumers can buy these amounts. Establishment of an energy community is same as it is valid for the cooperatives.
Role of system operator (registration and data related)	An energy community must apply to be registered by the DSO. Namely, this means the change of the status of a metering point-grid connection point and the DSO must also be informed about the changes of the suppliers, just because the DSO is obliged to provide the metering data (as written in the legislation): Distribution system operators, in cooperation with energy communities, should ensure that billing transmission of electricity is facilitated within those communities. The payment for this service shall be determined by the agency in the manner and according to the procedure specified for payment for other services of electricity operators. For energy communities, non-discriminatory, fair, proportionate, and transparent procedures and payments of network charges and entry to the organised electricity market should be laid down in subordinate regulations and general acts.

Registration processes with system operator (or with dedicated agency)	An energy community, or rather, an energy self-sufficient community must register with the distribution system operator. The distribution system operator must be informed about the establishment of an energy community, and be sent the list of all participants and the numbers of their metering points. The community, because of a renewable energy generation implementation, must make a grid connection contract with the DSO. Each community participant or their authorised representative has to sign an additional agreement with the DSO so that all data can be properly processed. The trading on the local P2P is only a matter of the supplier and customer.
Does the regulation impose/ allow the energy sharing organiser (ESO)	ESO should be registered as a supplier, trader and must establish their own balancing group, and they must become responsible for balancing.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Retail suppliers are responsible for balancing and billing of the residual electricity demand. The supplier covers the residual load of a customer and buy or trade with the surpluses of energy.
Data management rules and procedures – who needs to do what with which data?	Yes, the DSO must provide the metering data. Energy communities must register their status with the DSO.
Information tools to increase awareness and understanding	Suppliers inform the customers, or Energy Agency P2P Trgovanje – URO DSO share no information about the possibility to trade on a local market-P2P.
Barriers to increase financial benefits and limit costs	P2P trading: no publicly available information, what is the amount of this market. The main barrier is in achieving the connection consent/agreement to connect the local RES or community owned RES on the distribution power network.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	For produced energy, there is no payment of net usage. Support scheme for RES.
Consumer rights & responsibilities	Rights and obligations in accordance with the EU legislation provides for freedom to choose a supplier, as the energy market is open. Self-sufficiency with electrical energy from renewable sources allows individuals or communities to produce their own electricity to cover their consumption needs. This can be done individually or collectively, with the right to self-sufficiency supported by legal provisions. Contracts with electricity suppliers ensure the purchase of excess electricity produced. Individual self-sufficiency involves connecting a self-sufficiency device to a building's internal electrical system, with specific power limitations.

	Self-sufficiency in multi-apartment buildings allows residents to connect multiple metering points, including those for common areas, to a self-sufficiency device, ensuring efficient energy use. Renewable energy communities enable at least two end consumers to produce and share electricity from renewable sources. These communities, organised as legal entities, focus on providing environmental, economic and social benefits rather than financial profits. They operate based on open participation and are controlled by members close to the renewable energy projects. The renewable energy community also has the right to produce, consume, store, and sell energy from renewable sources, including through contracts for the purchase of electricity from renewable sources. It has equal access to all relevant energy markets, both directly and through aggregation. For the purposes of the ZSROVE law (Official Gazette of the Republic of Slovenia, No. 121/21), it is considered an electricity producer. Declarations and certificates of origin can be issued for the production facility, and it can receive support under Articles 15 and 20 of the ZSROVE law (Official Gazette of the Republic of Slovenia, No. 121/21).
Settlement period	1 month
Energy sharing coefficients	Energy communities: Energy Agency in DSOs. P2P: suppliers/ESOs.

Spain	
Project in charge of the review	LocalRES
Names of contributors	Lucía Aller
Main relevant regulatory texts	Royal Decree 244/2019 : Entered for collective self-consumption (CSC) Royal Decree 23/2020 : for REC Draft royal decree developing the figures of renewable energy communities and citizen energy communities. (20/04/2023)
Status	RD244/2019: in force RD 23/2020 : in force but missing enabling framework Draft royal decree developing the figures of renewable energy communities and citizen energy communities. (20/04/2023): For more than a year now, there has been no news of the amendments requested by citizens' groups to the draft law. The final royal decree about energy communities has not been published to date.

Types of energy sharing models that are allowed	Energy sharing can be done directly between producers and consumers, or through an energy community (REC) For power sharing, there are several models depending on the total installed power according to RD244: ***For P<= 100 kW*** Collective consumption with surplus with simplified compensation: the energy not consumed is fed into the grid and, according to the marketing company, the kWhs fed in are compensated at a specific price, which is reflected as a discount in the electricity bill the following month. The bill cannot be negative or €0. This price can be regulated by the market or it can be set by the same marketer if it belongs to the free market. Collective self-consumption with surplus not under simplified compensation: the owner of the installation must be on the register of energy producers of the regulated market. The energy is sold on the market. This formula is usually interesting when the installed capacity is greater than 100 kW. Collective consumption without surplus: the unused energy is lost and not fed into the grid. The installation must have a spillage prevention system. ***For P>100 kW :*** Collective self-consumption with surpluses not subject to simplified compensation: the owner of the plant must be on the register of energy producers of the regulated market. The energy is sold on the market. In this case, the users are not eligible for simplified compensation.
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	RD244/2019: Sharing of electricity production between one or more producers and one or more consumers signing a Sharing Agreement, within a 2 km radius No maximum capacity but process to install >100kWp is more complex.
Role of system operator (registration and data related)	In Spain, the system operator is REE, whose functions as part of the management of energy communities or self-consumption is the responsibility for demand management. For the registration of self-consumption, the actors involved are: Municipalities, Ministry of Industry/Energy of the autonomous communities and the DSO.
Registration processes with system operator (or with dedicated agency)	1. Once the production equipment has been installed, the electrical installation certificate (CIE) document is generated. 2. The installation company must register with the technical information, attaching several documents, such as the technical report, the CIE, the distribution agreement, among others. This registration is done through the website of the Ministry of Industry or Energy of each autonomous community. In many autonomous communities it is compulsory for this registration to be carried out by an official installer previously registered in that autonomous community. 3. Once the application for registration is approved by the institutional body, it generates the relevant accreditation documentation, which is sent to the owner of the installation; in each autonomous community the document is different. In turn, the autonomous community sends this information to the DSO. 4. The DSO modifies the contract of the self-consumption users in order to apply the distribution coefficients of the collective self-consumption.

Does the regulation impose/ allow the energy sharing organiser (ESO)	At the moment, the position of the community manager is only found in the regulations of RD 244/2019. The DSO does not admit this figure as a representative, as they require all users of self-consumption to sign the sharing agreement. It is not possible to act on behalf of consumers before the DSO. There is no development of this position at the regulatory level, only administrative blocking by the DSOs
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	Responsible for billing and collecting network tariffs and taxes
Data management rules and procedures - who needs to do what with which data?	The coefficients are submitted to the DSO, which then communicates to the retailers of final customer.
Information tools to increase awareness and understanding	The administration has opened different technical offices that offer support to energy communities. https://oficinadetransformacioncomunitaria.es/. Guides have been published, financed by different autonomous regions, both for collective self-consumption and for energy communities. In particular the IDAE (Institute for Energy Diversification and Saving) guides. https://www.idae.es/publicaciones/guia-para-el-desarrollo-de-instrumentos-de-fomento-de-comunidades-energeticas-locales Also different non-governmental organisations such as Amigas de la Tierra have published a guide to support energy communities. (https://www.tierra.org/comunidades-energeticas /) The private sector has created web tools to pre-design the photovoltaic potential of energy community projects or to find other energy community projects that you can join. (https://somcomunitats.coop/#troba-la-teva-comunitat , https://comunitat.joinenergy.eu/predesign/)
Barriers to increase financial benefits and limit costs	To participate in CSCs, no legal entity needs to be created, but some subsidies are targeted only towards energy communities, which need to have been established as a legal entity, and must comply with the definition in the EU Directive 2018/2001 of Renewable Energy Communities. Due to the Regulation (EU) 2021/1060, subsidised installations must be kept in ownership for at least the first 5 years. This may be a limiting factor for some financing models. The processing of the generating installation, mainly for PV sizes above 100kWp, brings additional complexities that may slow down the CSC deployment.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	Self consumed electricity is exempted from grid fees at LV level Self-consumed electricity is not covered by the IVPEE and the generation toll. PREE programme Subsidies for energy communities -EC Implementa Programme - EC Offices Programme -Solarcoop

	- Incentive programme for innovative renewable energy and storage projects, as well as for renewable thermal systems.
Consumer rights & responsibilities	Energy sharing participants can keep their existing retailer. Sharing keys: Every customer can decide what share they would like to get
Settlement period	30min
Energy sharing coefficients	Every customer can decide what share they would like to get: can be static or dynamic, and can be revised every quarter (ex ante). The coefficients are submitted to the DSO. DSO communicates to the retailers of final customer. At present, the dynamic coefficients, although included in RD 244, are not operational due to technical problems with the distribution company. They can be fixed annual, monthly or even hourly coefficients, ex-ante.

Sweden	
Project in charge of the review	PARMENIDES
Names of contributors	Carolin Monsberger
Main relevant regulatory texts	Legislative proposal (proposed by Energy Market Inspectorate EI), however, bill 2021/22:153 concluded that ECs are already possible in Sweden (collective self-consumption), no obstacles exist and no new legislation is needed. Ordinance 2007:215 (Section 22c)
Status	
Types of energy sharing models that are allowed	Current legislation: collective self-consumption in an apartment building with the same grid connection is allowed (general approach: same electricity supplier for entire building and individual electricity consumption measurement that affects monthly rent). Ordinance 2007:215 (Section 22c) makes exemption from the requirement for a network concession under Electricity Act (1997:857) for underground cables between a production facility or storage facility between neighbouring buildings. There exist first pilot areas with concession exemption (e.g., Tamarinden, ElectriCITY – Hammerby Sjöstad 2.0 and SIMRIS).
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	Tenants/apartment owners of the same multi-apartment building. The legislative proposal by EI would have included: Three or more natural or legal persons differentiating between investing and non-investing members, but not adopted by bill 2021/22:153.

Role of system operator (registration and data related)	NA
Registration processes with system operator (or with dedicated agency)	NA
Does the regulation impose/ allow the energy sharing organiser (ESO)	NA
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	NA
Data management rules and procedures – who needs to do what with which data?	NA
Information tools to increase awareness and understanding	NA
Barriers to increase financial benefits and limit costs	No special policies or measures to promote energy communities or include them in renewables support schemes
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	No
Consumer rights & responsibilities	NA
Settlement period	NA
Energy sharing coefficients	NA

Switzerland	
Project in charge of the review	PEDvolution
Names of contributors	Vicente Carabias-Hutter (ZHAW), Pascal Kienast (ZHAW), Martina Rechsteiner (ZHAW)
Main relevant regulatory texts	Swiss Energy Law: https://www.fedlex.admin.ch/eli/cc/2017/762/de Swiss Law on Electricity Supply: https://www.fedlex.admin.ch/eli/cc/2007/418/de with planned revisions in the respective regulations, cf. https://pubdb.bfe.admin.ch/de/publication/download/11641
Status	The Swiss energy legislation has been revised after public vote to allow self-consumption communities (EVG, vEVG, ZEV, vZEV, LEG). The abbreviations refer to the German terms and can be found under Eigenverbrauchsregelung VSE. Loosely translated they refer to: • EVG= Self-Consumption Community (old term) • vEVG=Virtual Own Consumption Community (old term) • ZEV=Collective for Energy Self-Consumption • vZEV=Virtual Collective for Energy Self-Consumption • LEG= Local Electricity Community
Types of energy sharing models that are allowed	In Switzerland there are own consumption approaches through ZEV (similar to former EVG) Merger for own consumption (EnG Art. 17) and LEG Local Electricity Community (will be introduced by January 1, 2026)
Participation criteria (geographical perimeter, max capacity, min-max number of members, type of members…)	For ZEV, the distinction depends on the specific configuration: up to the distribution cabinet for vZEV, within the grid area for LEGs. ZEV is ideal for newly built objects, or very closely connected objects. LEG present the future opportunity for bigger connected energy communities in communities or municipalities.(Source: ZEV nutzen: Gemeinsam Solarstrom und Kosten sparen | CKW, Virtuelle ZEV und lokale Elektrizitäts-gemeinschaften – Energie-Experten) For ZEV, according to Article 17 of the Energy Act (EnG), participants are classified as: • property owners • producers • tenants/leaseholders • distribution system operators (DSOs) • energy suppliers. Measuring devices must comply with the requirements of the Measurement Instruments Ordinance and the Ordinance of the Federal Department of Justice and Police on Measuring Instruments for Electrical Energy and Power. (Source: VSE). A vZEV includes all properties behind a common network node at grid level 7 (distribution cabinet or junction with connection lines), where locally generated energy is consumed without using the connection lines leading to the network node. If the voltage is below 1 kV, the connection line and the corresponding connection point (e.g., distribution cabinet or transformer station) can be used for self-consumption.

	A vZEV is only possible for installations connected to the same busbar of a low-voltage feeder. In a junction network, a vZEV cannot be formed unless multiple connection lines are linked to a single junction. Busbars and protective devices within a distribution cabinet can be used for a vZEV. (Source: VSE) In the future, users, prosumers, renewable electricity producers and storage facilitators can build a LEG together. All the participants need a smart meter. The law states that LEG participators need to be in the same grid area, must be on the same grid level and in close geographical proximity. In addition, the LEG must fulfil a minimal electricity production in proportion to the connection capacity. (Source: Virtuelle ZEV und lokale Elektrizitäts-gemeinschaften – Energie-Experten)
Role of system operator (registration and data related)	The DSO provides interested parties with the necessary information about vZEV to support the formation of vZEVs. This includes the following information: • vZEV relevant network topology • Tools to Visualise the vZEV perimeter The DSO must provide the property owner with all necessary information for the formation of a ZEV within 14 days. Furthermore, the DSO ensures network access, basic supply, and measurement as an end consumer at a single measuring point (ZEV) or multiple measuring points (vZEV) (Article 18, Paragraph 1 EnG). The DSO is obligated to accept energy from the collective if the conditions in Article 15 of the EnG are met. If an intelligent metering system of the DSO is used, it ensures the transmission of measurement values to Pronovo. Lastly, the DSO requests property owners for periodic inspections and informs the contact persons for self-consumption about all relevant information (e.g., planned shutdowns). For LEG, the DSO is responsible for the measurement of the energy consumption of the participating parties. In addition, the DSO is also responsible for the settlement of residual electricity, grid usage, and levies. (Source: Virtuelle ZEV und lokale Elektrizitäts-gemeinschaften – Energie-Experten)
Registration processes with system operator (or with dedicated agency)	For self-consumption installations in new buildings, it is recommended that property owners coordinate with the DSO. The notification for self-consumption must be made at least 3 months in advance. ZEV: The set-up and dissolution of the self-consumption collective must be registered by the property owner with the DSO at least 3 months in advance. (Source: VSE)
Does the regulation impose/ allow the energy sharing organiser (ESO)	The regulation does not impose the ESO, but creates the market opportunities to enable it. As the energy policy framework is evolving in Switzerland, developments in this direction are possible.
Role of retail suppliers linked to connection point of final customer engaged in energy sharing	The retail supplier buys energy surplus and supplies residual electricity needed. This is provided for each ZEV (and vZEV) as well as in the future for each party of the LEG. (Source: ZEV nutzen: Gemeinsam Solarstrom und Kosten sparen | CKW)

Data management rules and procedures – who needs to do what with which data?	The DSO is responsible for all billing-relevant metering devices in relation to the association, as well as the legally required production and storage measurement. The DSO also determines the measuring devices and metering concepts. (Source: Chapt. 6.2 HER – CH 2024)
Information tools to increase awareness and understanding	Smart meters must feature a local data interface for accessible data. A customer portal with sensitive data serves for visualisation and billing information, no real-time data on this customer portal is foreseen. EnergieSchweiz provides a useful platform for information related to renewable energy opportunities, increases awareness and provides tools for different calculations. (Source: 7190-ECH-Broschuere-EsiA-805.170-ENG.pdf) Energie Experten powered by EKZ provides a useful blog platform to increase awareness and understanding. In addition there is the Axpo Group website CKW, where also the most important developments and opportunities of ZEV and LEG are presented.
Barriers to increase financial benefits and limit costs	The community is limited to the dedicated utility grid (municipality). Grid tariff for LEG can only be reduced by 30% respectively only by 15% if the transformation grid is used.
Financial incentives and support schemes (incl. Reduced grid tariff or taxes)	For consumers below 50 MWh/year or without smart meters, a minimum 70% energy-based tariff remains mandatory. Additionally, cost allocation between grid levels is refined, increasing the power-based share to 90% while incorporating the actual electricity flow direction to ensure a more transparent and cost-reflective distribution. These adjustments aim to create fairer and more efficient electricity pricing while maintaining grid stability.
Consumer rights & responsibilities	Opt-out-possibility to always choose between ZEV and utility.
Settlement period	Not clearly defined
Energy sharing coefficients	Not clearly defined

3.3 Synthesis

Based on the inputs provided by projects, the 'maturity' of the regulatory frameworks related to energy sharing (as of March 2025) was assessed in all covered Member States.

Four levels of maturity are proposed:

- 0 – no regulatory framework for energy sharing
- 1 – partial framework (e.g. energy sharing limited to a single building or a private grid) or regulation still in development
- 2 – functional regulatory framework but still with some limitations (e.g. only static coefficients allowed, energy sharing organiser not yet defined in regulation, market barriers still to be addressed)
- 3 – fully functional regulatory framework for energy-sharing

Countries where regulation is rather advanced include Portugal, France, Spain, Italy and Austria. However, the regulatory frameworks in those countries still have some limitations, e.g. in Austria only energy communities can perform energy sharing, in Spain the energy sharing organiser does not exist yet and the process to register an energy-sharing arrangement may take time. In several cases, fully dynamic energy sharing coefficients are not possible yet. Regulatory frameworks are being developed in central and northern Europe (e.g. Germany, Czechia, Sweden, the Netherlands, Denmark) but are not completely functional for now.

Overall, there is a positive move towards the establishment of supportive regulation of energy sharing throughout Europe. The sharing of good practices is critical at this stage, to ensure that regulation truly supports energy sharing initiatives and also implements a level playing field for those citizen-led schemes.

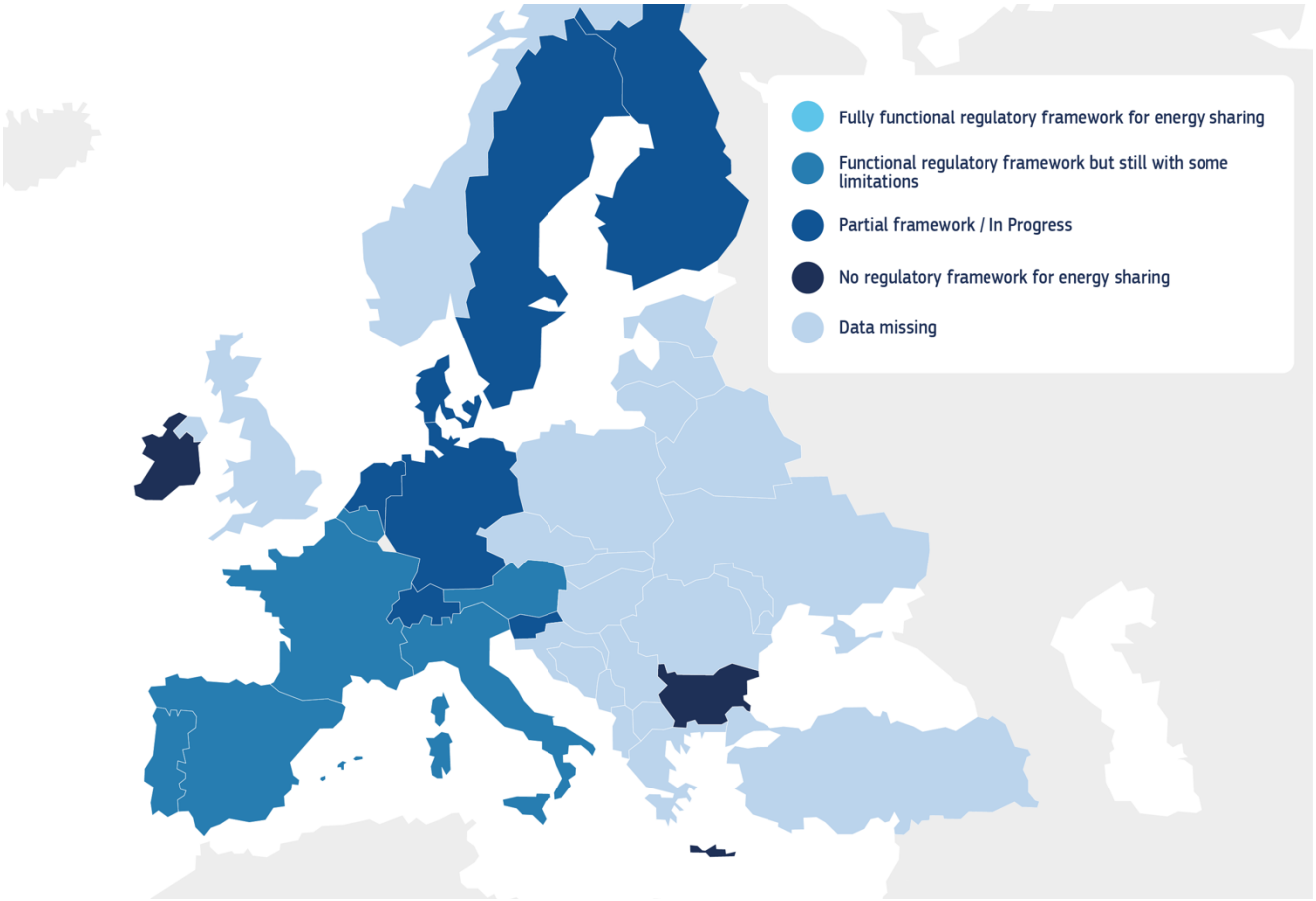

Figure 4: Maturity of the national regulatory frameworks for energy sharing

3.4 Specific reports from projects

This collective review sparked dynamic discussions among projects, fostering the exchange of knowledge and valuable lessons learned. This embodies the true essence of the BRIDGE initiative: enabling projects to learn from one another and accelerate progress together. As a result, several projects have provided below detailed insights and information on their demonstrations, sharing good practices to benefit the wider community and enhance collaboration. Other projects, which recently started, are not in a position to share lessons learned yet, but will do so in future BRIDGE reports.

PEDvolution	
Project logo	PEDvolution
Website	https://pedvolution.eu/
Start/end date	1 January 2024 / 31 December 2026
Objective / short presentation	PEDvolution paves the way for cross-sectoral integration of ever-evolving PEDs through the co-development and implementation of seven interoperable solutions: 1) PED Design and Planning Toolset, 2) PED Readiness Assessment, 3) Dynamic Decision Support Guideline for PED Development, 4) PED Energy Manager, 5) Data Exchange, Integration and Interoperability Platform, 6) PED Business Models, 7) Social Innovation tool. PEDvolution will design, process, optimise and strengthen the PEDs interoperability, business, societal and technological factors addressing and handling PED interaction and integration with inbound and outbound energy resources across energy and non-energy sectors.
Location and short description of demo sites	**Residential neighbourhood Planina, Kranj, Slovenia.** Creation of a new energy community together with citizens and industrial partners, who provide excess heat for optimal revenue distribution and sharing of benefits. Activities: Existing industrial components for low-temperature dirty condensate inside will be equipped with calorimeters to determine precise temperatures whereas PEDvolution toolset will calculate accurate waste-heat energy output; Nearby hydropower plants will be virtually connected to the PED. A new energy community will provide renewable energy with long-term fixed electricity prices to reduce risks related to energy markets; Excess heat not used in the industrial process will be transferred to a second nearby PED for the possibility of completely excluding the need for natural gas for district heating; Integration of an electric boiler, ensuring smooth operation of system services, notably negative secondary control; New software solutions integrated with the PEDvolution toolset will allow automatic dynamic demand response. **Schönbrunn village Wunsiedel, Germany.** After building the local PED, the aim is to establish the ultimate PED on a regional level. Activities: Existing and new RES installations to be equipped with automated AI-based controls delivering automated control and optimisation while integrated with the local grid through the Interoperability platform; Efficient operation of assets will allow additional customers to utilise the district heating network and replace energy sources with RES; Every building shall become part of the PED, supporting the energy generation and storage facility; Identification of local surplus energy, channelled to heating and electricity storage facilitates, further improving overall performance and reducing the need for investments; Starting from Schönbrunn PED new RES and cross-vector assets will be integrated in the next level approach: regional level PED. **Hard community, Winterthur, Switzerland.** A complete integration of renewable energy sources (hydropower, PV systems) with the energy usage (heat pump, general electricity, electric vehicles). Activities: Expansion of the PV system on additional roofs; Expansion of e-mobility, shared mobility options; Creation of self-sufficient communities of single buildings; From gas central heating to a central heat pump heating; Inclusion of services from DSO and from local community.

Barriers & lessons learned	• Transitioning from natural gas to waste heat integration and renewable energy sources requires substantial initial investment. • The integration of waste heat into the district heating network presents synchronisation and infrastructural challenges. • Full digital remote readable metering roll-out not fully integrated affecting the ability to monitor and collect data in real time as well as using dynamic tariffing. • Sector coupling complexity: The integration of various energy vectors (electricity, heat, storage) requires advanced control mechanisms as to support smooth grid operations and sector coupling abilities. • Balancing supply and demand could be problematic when relying on intermittent renewable energy sources, with PV being the main source besides the CHP. • Negotiating contracts for waste-heat supply requires a well-structured business model. • Involvement and smooth collaboration of multiple stakeholders, including industrial partners, municipal authorities, and residents, necessitates efficient coordination. • Technical and regulatory requirements for feed-ins and trading feeding fulfilment must be ensured by the PEDs. • Regular engagement with businesses and residents through local representative groups can help maintain transparency and trust. • Lack of public awareness and knowledge about PED concepts and benefits. • While stakeholder engagement is encouraged, engagement and commitment from stakeholders takes time. • Even when policies supporting renewable energy are available, adapting to evolving regulatory frameworks and securing incentives remains a challenge. • Legislative framework may restrict the implementation of energy communities and energy sharing communities. Limitations may include grid connections, ownership, peer to peer trading and metering regulations. • Ensuring that energy transition solutions align with local conditions and can be scaled up over time enhances their long-term viability. • The integration of additional households into the district heating network is a long process that depends on infrastructure upgrades and participation rates. • Scaling up and connecting to a broader super-PED could face coordination and technical challenges in energy exchange, storage management, and market integration. • Industrial partners are more likely to participate if economic benefits are clearly identified, making business model development a priority. • Utilising municipal media, public meetings, and online platforms to inform stakeholders fosters a sense of ownership and increases project support.
Good practices	• ***Public-Private Collaboration****: enables efficient integration of renewables and waste heat.* • ***Community Involvement****: Resident representatives ensure transparency and local support.* • ***Customer Engagement:*** *Enabling households to become prosumers, ultimately fostering a more autonomous, transparent, and customer-driven energy system.* • ***Waste Heat Recovery****: Industrial waste heat integrated into the district heating network reduces reliance on natural gas.* • ***Renewable Expansion****: Solar PV on public buildings and hydropower boost clean energy production.* • ***Incentivised Partnerships****: Industrial partners benefit from supplying waste heat.* • ***Green Financing****: EU subsidies reduce upfront investment costs.* • ***Decentralised energy-sharing model:*** *Energy sharing mechanism integrating smart metering, dynamic tariffs, and a cooperative structure, while overcoming regulatory*

	hurdles, deploying an energy pooling solution, engaging participants through workshops, and establishing a scalable foundation for future expansion with additional households, PV installations, and battery storage. • ***Support EU Climate Goals**: Align with the "100 Climate Neutral and Smart Cities by 2030" initiative.* • ***Replicable Model**: Waste heat integration can be applied in other cities.*

FEDECOM	
Project logo	
Website	https://fedecom-project.eu/
Start/end date	October 2022 / September 2026
Objective / short presentation	FEDECOM (FEDErated –system of systems" – approach for flexible and interoperable energy COMmunities) demonstrates sector coupling by federating energy communities. FEDECOM provides a scalable and adaptable cloud-based platform including analytical, modelling and optimisation services for planning, supervision and control of integrated local energy systems.
Location and short description of demo sites	**Spanish Pilot** The Spanish pilot sites will test FEDECOM platform in different environments: - The Puertollano Green Hydrogen Plant, the second largest European facility for industrial green hydrogen production, developed by Iberdrola. It aims to reduce dependence on natural gas in ammonia and fertilizer production. The FEDECOM platform will further optimise the plant's energy generation and consumption, facilitating energy trading and enabling integration with renewable energy sources. - Urberoa and Bilbao: The pilot sites include a residential district of 570 housing units in Urberoa, and five municipality buildings in Bilbao. By integrating FEDECOM's innovative energy management solutions, the project aims to enhance efficiency through optimised thermal and electrical interdependencies among these sites, as well as increasing and optimising the use of electrical systems, such as heat pumps, taking advantage of the peer-to-peer FEDECOM electricity market. - Barcelona: FEDECOM partners are managing a hydrogen production facility used to full up a fleet of 60 hydrogen-powered buses and decarbonise industrial activities. By integrating with the FEDECOM platform, the station aims to optimise energy flows, support hydrogen distribution across other nodes, and enhance trading opportunities, paving the way for an expanded network and energy independence **Swiss Pilot** The Swiss pilot is a federation of energy communities with the purpose of fostering energy exchange and flexibility services among its members, in addition to the aggregation of resources to provide services outside the federation. It consists of three energy communities: Lugaggia Innovation Community, Arena Innovation Community, and Garamè District, located in southern Switzerland. The main objective of each energy community is to maximise self-consumption by optimally managing and controlling locally available Renewable Energy Sources. The FEDECOM initiative focuses on

	optimising energy efficiency and flexibility within and across these communities through a multi-asset coordination platform, facilitating energy exchange, storage, and demand-side management. **Benelux Pilot** The Benelux Pilot (also called Cross-country e-mobility Federation) aims to enable energy and flexibility sharing across interconnected communities in Belgium and the Netherlands, including the Brussels Brico Retail Community, Voorhout Village, and Besix Schelle alongside the Aug-e community. This initiative maximises the exploitation of local renewable energy sources, such as solar PV installations, and leverages storage through batteries and e-mobility systems. The FEDECOM platform facilitates optimised renewable energy utilisation, energy exchange, and flexibility management supports this cross-border collaboration by optimising renewable energy usage, demonstrating the positive impact of scalable, cooperative efforts in sustainable energy solutions.
Barriers & lessons Learned	In Switzerland, regulations currently pose a significant barrier to the development of energy sharing at the community level. Energy communities are constrained by the principle of electricity contiguity, which requires them to own, operate, and maintain their own distribution networks. The associated costs, expertise, and workforce demands create substantial obstacles. As a result, energy communities in Switzerland are generally limited to single buildings, where tenants participate in collective self-consumption schemes. However, FEDECOM has successfully overcome this barrier by integrating the local DSO into its consortium. The DSO also acts as the community manager, enabling grid users connected to its network to join an energy community. This requirement, however, was removed from Swiss regulations on January 1, 2025, following the review of the Federal Act on a Secure Electricity Supply from Renewable Energy. In Brussels, a significant barrier exists for the engagement of prosumers in energy-sharing schemes due to network tariffs. The network tariff applied depends on the location of the two parties involved in energy sharing (bilaterally or through an energy community). If the energy exchange involves the use of the regional transport network (medium voltage, MV), the associated tariff is higher than the ones applied for purchasing electricity from a traditional supplier. While it may seem logical to prioritise exchanges between consumers within close proximity, urban areas, such as Brussels, often lack readily available energy-sharing partners within a small geographic range. Consequently, the current tariff structure could act as a significant barrier to energy sharing in densely populated urban regions. We recommend that the specific characteristics of urban areas be carefully considered to avoid imposing undue barriers on consumers who wish to engage in energy sharing.
Good practices	As FEDECOM has only recently entered its implementation phase, the project has limited feedback available. Some barriers and corresponding actions have been anticipated as part of a regulatory and barrier analysis. However, unforeseen barriers may also arise during the project's implementation phase. FEDECOM is expected to provide a comprehensive set of best practices at a later stage of the project.

LocalRES	
Project logo	
Website	https://www.localres.eu/
Start/end date	01/05/2021-30/04/2026
Objective / short presentation	LocalRES deploys innovative local energy systems led by RECs, promoting a socially fair energy transformation that empowers communities and citizens with renewable energy. The systems include decarbonisation solutions (e.g. PV, power-to-vehicle, storage or ICT) and are being demonstrated in different rural sites across Europe with limited grid connections. LocalRES aims to actively engage citizens, local actors, and communities in the energy transition, focusing on RECs for leading the structural change towards decarbonising local energy systems. To do so, a holistic approach covering the whole value chain of RECs is proposed, including: learning and awareness raising, assessing REC-driven services and business models, co-designing RECs through participatory processes, integrating decarbonisation solutions, and promoting REC replicability alongside policy recommendations.

Location and short description of demo sites	The LocalRES project includes four demonstration sites plus one fellow case across Europe, where the LocalRES concept will be deployed. **Ispaster (Spain):** Ispaster is a small village located in the coast of Bizkaia, in the north of Spain. With a municipal area of 22 km², Ispaster has a population of 740 inhabitants, of which 350 are concentrated in the main neighbourhood of Eleixalde. The project's demonstration actions will be focused on this district, where the municipal facilities are located, including the town hall, the public school, a cultural centre, a sports centre, two restaurants, a daycare centre a kindergarten and other public services, as well as most of the small services and industries present in this area. **Ollersdorf (Austria):** Ollersdorf is located in the south-east of Austria and has a population of about 1,000 inhabitants. 200 of them are already part of several activities to further increase the integration of renewable energy sources. Ollersdorf aims to set up an energy community for sharing the locally produced energy, increase the share of RES and to couple different energy sectors, such as electricity and mobility, while increasing the resilience of the energy system during blackout events. **Berchidda (Italy):** Berchidda is a 3,000 inhabitants village located in the north of Sardinia Island. The land covers approx. 201 km^2 and it is located at an average altitude of 300 m, with a wide hilly area in a radius of almost 20 km. Different technical and non-technical measures will be implemented in Berchidda demo site to increase their energy independence, while enhancing the flexibility and efficiency of the energy system, improving the stability of grid and increasing the penetration of RES. **Osimo (Italy):** With a population of approximately 35,000, it covers an area of 106 km^2 and sits at an average altitude of 265 metres. The city energy mix includes electricity, natural gas, district heating, and a substantial 23% share of renewable energy sources, primarily from photovoltaic panels. Osimo seeks to establish an energy community that promotes the sharing of locally generated renewable energy. **Kökar (Finland):** This small archipelago municipality on the Åland Islands has a total land area of 64 km². The population of Kökar Island is officially 234 (2018), but the actual number of inhabitants ranges from 160-170 in wintertime to 1,000 in summertime. Kökar became a **fellow case** in April 2024, due to due to minority opposition delaying the technical activties.
Barriers & lessons learned	LocalRES demonstration sites encountered the following main barriers at the start of the project: • P2P trading is not possible in practice for a REC in Austria, as the sharing coefficients within the community are calculated by the DSO • Enabling framework for RECs not established yet in Finland (and not fully established in Spain when the project started) • Opposition to the project of a local minority resulting in a legal process in Kokar • Increased costs of technologies because of unexpected inflation This led to changes in the scope of the demonstrations: The blockchain P2P approach in Ollersdorf was transferred to another demo (Osimo). The demo in Kokar will be pursued outside of the project due to planning incompatibilities since the activities were delayed by local opposition (Kokar therefore became a fellow case). Fortunately, there are also drivers and enablers pushing for the creation of energy communities and the uptake of energy sharing. Those include: • Strong support from the municipalities and the mayors in all the 4 demonstration sites • Support from local DSO in Italy (Berchidda as well as Osimo) • Previously funded EU Projects & local Projects, which have sped up the implementation of LocalRES demonstrations • Fluctuating energy prices, which make energy sharing more attractive • Raising climate awareness

Good practices	The consortium is working on a deliverable summarising lessons learned and good practices from the demonstrations. LocalRES participated in a cluster led by the project SERENE, consisting of 3 EU-funded projects (SERENE, SUSTENANCE and LocalRES), which developed a **policy brief** in October 2024, entitled "**A multi-disciplinary approach to increase the local adoption of energy-efficient solution**"

ACCEPT	
Project logo	
Website	https://www.accept-project.eu/
Start/end date	1/01/21 – 31/12/24
Objective / short presentation	The core of the ACCEPT project is the concept of "energy communities" with the collective approach to bring citizens, local businesses and organisations together, to produce and consume locally generated, renewable energy. The EU-funded project intends to develop and deliver a digital toolbox, that allows such energy communities to offer innovative digital services to reduce the dependency on fossil fuels, save energy in the users households and thus be able to reduce their electricity bill without compromising the quality of living, but ideally increasing the comfort in their homes through smart devices. In ACCEPT, these developed tools will be demonstrated and validated in four pilot sites in Greece, the Netherlands, Spain and Switzerland involving more than 3,000 people and 750 residences.
Lessons learned	**Swiss pilot site** The Swiss Energy Strategy 2050, effective from 1 January 2018, aims to transition Switzerland to a low-carbon economy by promoting renewable energy sources and energy efficiency. The Swiss Energy Community is a self-consumption community formed by end consumers to maximise self-sufficiency and self-consumption. The energy community must meet strict requirements such as electrical contiguity, physical contiguity, no usage of the public grid, installed DER capacity, and a lower tariff than the domestic protected market tariff. The current regulatory framework limits energy communities' participation in demand response programs involving stationary batteries and imposes a double taxation policy. The lack of a supportive regulatory framework may hinder the development of business models and services for energy communities, impacting their ability to offer value-adding services and participate fully in energy and flexibility markets. **Dutch pilot site** The Dutch energy markets are liberalised and low thresholds, making energy sharing possible even though it has not been established in law. To make smart energy sharing possible, the new Dutch Electricity Act must be amended to include energy sharing in the

law. Prioritising projects that minimise the impact on the electricity system through flexibility tools, such as energy sharing, and rewarding electricity customers for aligning their offtake with renewable generation over time is recommended. The Dutch federation argues to strengthen the definition of energy communities by adding the word democratic to prevent corporate capture. The transposition of the RED II in the Netherlands has not been finalised, hindering support for energy sharing and market development. To enable smart energy sharing, five improvements are recommended:

1) Incorporating energy sections in the Dutch Energy Act
2) Redefining the allocation point in the Energy Act
3) Prioritising projects that minimise the impact on the electricity system through flexibility tools
4) Rewarding electricity customers with lower connection or transmission tariffs for organising their purchases over time to renewable production
5) Allocating transmission capacity to projects that minimise the impact on the electricity system.

Spanish pilot site

The Spanish Regulatory Framework, including the Electricity Sector Act 24/2013, Royal Decree 244/2019, and Royal Decree-Law 23/2020, has been a significant factor in the integration of renewable energies, particularly PV plants. The recent approval of RD244/2019 allows citizens to inject their electrical surplus into the electricity grid, enabling multi-property renewable plants. However, the current Spanish policy framework has not fully developed the European Regulation (EU) 2019/943, which allows small/medium users to participate actively in the energy market as prosumers. Despite these improvements, barriers to ECs in Spain include regulatory constraints for self-consumption, distance limitations for collective PV plants, and the lack of flexibility programs for small/medium consumers. The Spanish tariff structure is divided into three periods for all consumers, but the energy crisis has increased electricity costs, leading to fix-tariffs that disincentivize users to shift consumption. Smart metering has been deployed in Spain, but access to real-time data is restricted, which could benefit demand side technologies.

Greek pilot site

The Greek retail market has been liberalised since August 2022, under state regulation to control significant increases in electricity prices due to the Covid-19 pandemic and the war in Ukraine. The Greek government has collaborated with the European Commission and national European regulators to create a non-discriminatory market access for all energy suppliers. The Greek energy market allows suppliers to enter and compete fairly, on equal terms for customers. In Greece, energy sharing is not defined in law, but virtual net metering (VNM) is available. This activity was initially available to city councils, schools, universities, farmers, and farming associations, but was later adopted by energy communities. The entity responsible for calculating the deduction of shared energy from metering data varies between Member States, with retail suppliers in Greece, Slovenia, and Spain. Greece has adopted the establishment and operation of Energy Communities, as introduced by Law 4513/2018. Despite 176 energy communities established in Western Macedonia, these communities face challenges such as costly administrative procedures, complex tax registration, and competition with private investors for operational reinforcement for renewable energy projects.

Good practices and recommendations	Accept made a comprehensive list of recommendations for the countries where the project deployed demonstrations: see D9.6 – Policy/market reform recommendation report for more details. Recommendations also covered the EU level: To overcome the initial large investment required in energy transition projects, the costs could be covered by the service provider as an ESCO model. Another option consists of an investment from the user, which will then be returned through cost savings after a payback period. Government incentives, subsidies, and favourable financing options should be in place to address this barrier.

ODEON	
Project logo	
Website	https://odeonproject.eu/
Start/end date	January 2024/December 2027
Objective / short presentation	ODEON introduces a sound, reliable, scalable and openly accessible federated technological framework (i.e. ODEON Cloud-Edge Data and Intelligence ServicePlatform and corresponding federated energy data spaces. AI Containers, Smart Data/AIOps orchestrators) for the delivery of a wealth of services addressing the complete life-cycle of Data/AIOps and their smart spawn in federated environments and infrastructures across the continuum. It will integrate highly reliable and secure federated data management, processing, sharing and intelligence services, enabling the energy value chain actors and third parties to engage in data/intelligence sharing, towards the delivery of innovative data-driven and intelligence-powered energy services in accordance with the objectives set by the DoEAP.
Location and short description of demo sites	ODEON results will be extensively validated in 5 large-scale demonstration sites in Greece, Spain, France, Denmark and Ireland involving all required value chain actors, diverse assets, heterogeneous grid and market contexts, and multi-variate climatic and socio-economic characteristics to support its successful replication and market uptake: **Greek demonstration site:** Demonstration activities in Greece will be implemented in Mesogeia, in the broader metropolitan area of Athens and a vast number of prosumers in data and intelligence sharing for the realisation of advanced data-driven and intelligence-powered services for grid resilience, energy management optimisation and prosumer empowerment through involvement in flexibility markets. More than 225,000 customers of the company, (near) real-time AMI data from MV customers (approx. 500 customers), major LV customers (approx. 900 customers), small LV customers (over 500 customers) and RES producers (over 300 PV producers and 100 PV net metering installations) will participate in the demonstration. The demonstration site will provide the delivery of accurate demand, generation and flexibility forecasts that will enable the identification of anticipated congestion in the grid and the definition of the flexibility required for its resilient operation. **Spanish demonstration site:** Demonstration activities in Spain will be performed in the area served by the distribution grid operated in the region of Granada, involving a high number of prosumers from the

	local mountainous communities of Fornes and Escúzar, in data/ intelligence sharing activities for the delivery of data-driven & intelligence-powered energy services for resilient grid operation through DR, energy system decarbonisation and green technologies penetration, grid asset management and self-consumption maximisation through smart home and DER control automation. **French demonstration site:** Demonstration activities in France will be performed in the rural area of Hangest-en-Santerre, involving, also, prosumers of the Co-Op, towards the delivery of data-driven & intelligence-powered energy services for resilient grid operation through utilisation of flexibility offered by prosumers, energy system decarbonization and green technologies penetration, grid asset management, as well as, self-consumption maximisation through smart home/ automation and bi-directional EV charging. **Danish demonstration site:** The Danish demo site will be demonstrated in the Bornholm Island. It will share data for various grid assets, smart metering data referring to more than 28,000 customers of the company, along with network topology data, which will be fused with highly granular sub-metering data from residential and industrial buildings and EV charging stations for the identification of anticipated congestion in the grid and the definition of the flexibility required to be provided by prosumers for its resilient and stable operation. **Irish demonstration site:** Demonstration activities in Ireland will be implemented in the Aran Islands and will involve and a vast number of prosumers in data and intelligence sharing for the realisation of advanced data-driven and intelligence-powered services for LEC self-consumption maximisation, energy management optimisation and prosumer empowerment. The delivery of demand, generation and flexibility forecasts that will facilitate the definition of optimal energy management strategies at community/ prosumer level for the increase of self-consumption and minimisation of reliance to the grid especially during critical conditions (harsh weather) and grid events that are usual in the isolated Aran Islands. Such strategies will trigger the execution of personalized controls across flexible assets of prosumers (Smart Home/ DER automation and EV charging), while enabling P2P energy transactions across the LEC as an additional measure for maximising self-consumption and respective benefits. Moreover, prosumers involved in the respective LEC will be guided towards further investing in green technologies for gaining a more active role in energy markets and activities through targeted and economically viable advises.
Barriers & lessons learned	The project is at too early a stage to promote good practices and lessons learned.
Good practices	The project is at too early a stage to promote good practices and lessons learned.

OPENTUNITY	
Project logo	
Website	https://opentunityproject.eu/

Start/end date	01/01/23 – 31/12/26
Objective / short presentation	The OPENTUNITY project aims to support energy actors, such as grid operators, prosumers, market players, among others by using innovative methodologies backed by advanced and interoperable software modules to provide them with new features and services. This includes technologies to increase flexibility in prosumer environments and technologies to help grid operators better manage grid operations. OPENTUNITY is fully committed to developing interoperable solutions relying on open standards. The main example is that the OPENTUNITY Blockchain is open source and no vendor lock-in, facilitating its connection with different software-based solutions and its replicability. The OPENTUNITY blockchain is based on Energy Web Chain, a public proof-of-authority blockchain. Another good example to illustrate this is that there is a set of methodological innovations directly focused on improving interoperability at grid, prosumer and IT development level. OPENTUNITY ecosystem relies on using a public decentralised architecture to ensure the trusted and secure registration of energy assets within the OPENTUNITY ecosystem as well as the data exchange between assets and systems/platforms. In the OPENTUNITY blockchain, actors from different fields could share services and find synergies among them and then create a reliable energy system in which different verticals (electromobility, gas, asset manufacturing, etc.) will be able to take a role. Moreover, thanks to the local flexibility market design (to be managed by NODES market platform), DSOS (and TSOs) will have an environment to trade flexibility with aggregators and individuals aiming at participating in this new market. All these innovations will be complemented by SSH (social sciences and humanities). OPENTUNITY takes a systematic perspective by focusing not only on technological opportunities and barriers, but by analysing the technical potential against the background of socio-economic factors, target group specific expectations, and differences in user experience.
Location and short description of demo sites	OPENTUNITY results will be tested and validated in 4 large-scale complementary demonstrators in Greece, Slovenia, Spain and Switzerland. This will involve a wide variety of energy sources, networks, systems and assets, and span heterogeneous climatic, geographic and socio-economic conditions and size. In this way, replicability, scale-up and eventual market launch will all be facilitated.

U2demo	
Project logo	U2DEMO
Website	https://u2demo.eu/
Start/end date	September 2024 – February 2028

Objective / short presentation	Launched in September 2024 with a substantial funding of 5 million euros, the U2Demo project aims to create innovative, consumer-centred management strategies that facilitate a widespread participation in eeer-to-peer (P2P) trading and energy sharing. The Horizon Europe project will promote equitable and democratic access to sustainable energy resources. The collaboration brings together 18 partners including 2 associated partners, from 8 countries, pooling their expertise to develop strategies that will be seamlessly integrated into open-source, non-proprietary tools and platforms. These solutions align with principles of openness, technology neutrality, interoperability, scaleability, replicability, reliability, security, and trustworthiness. The P2P trading and energy sharing tools will account for existing flexibility services managed by transmission and distribution system operators (TSOs, DSOs), including both implicit and explicit demand response (DR) programs, as well as dynamic capacity and price signals/contracts. The initiative strives to enhance coordination leveraging information exchange through existing dataspaces and middleware. Decision support algorithms will empower consumers and prosumers to actively engage in energy and flexibility services, promoting negotiation and collaboration among peers and stakeholders maximising their benefits.
Location and short description of demo sites	U2demo strategies will undergo testing in 4 pilots within at least four diverse energy communities, each characterised by unique attributes and governance models, located in Italy, Belgium, Netherlands and Portugal. The overarching objective is to assess advanced P2P trading and energy-sharing tools, determine optimal implementation conditions, and consolidate the most promising solutions and associated business models. **Portuguese Pilot** *Location:* Valverde is a small rural village in the countryside of Évora. It has around 450 inhabitants and 200 residential buildings connected to the LV grid. There is only one MV client in Valverde, Évora University, owner of a secondary substation. Besides its small dimension, Valverde is an innovation hub for energy-oriented projects, being the home of H2020 DOMINOES, InteGrid, SENSIBLE, and, POCITYF, which has equipped and will equip Valverde's clients with advanced devices and software tools that concerns local energy production and consumption monitoring and control. *Specific Challenges:* The PT pilot will address several challenges, starting with the integration of P2P trading concept to manage the energy transactions between members of a REC. Hereto, the algorithms governing energy sharing will be subjected to empirical testing. This evaluation aims to facilitate a comprehensive comparative analysis and assessment of P2P energy sharing mechanisms in contrast to alternative energy sharing algorithms that do not encompass the P2P mechanism using a controlled regulatory environment. **Dutch Pilot** *Location:* Living Lab Scheveningen is the flagship programme of The Hague's Smart City activities. In the lab, a number of societal challenges around environment, safety and sustainability are tackled in the public space. An energy community at the beach side of the harbour is the main project in the energy domain. Since last year, a collaboration with the local DSO (STEDIN) has allowed the development of deeper studies involving grid factors and the test of flexibility services. The living lab only targets municipal users, due to legal constraints, but in the already funded next phase of the project, there are plans to expand the physical infrastructure to commercial users as well. The partners set up a cooperative to manage the grid and the member's value streams, which will be the future adopter of the envisioned platform.

	Specific Challenges: Use or create open-source technology focused on decentralised principles. As one of the cities in the 100 Climate Neutral & Smart Cities EU mission, and with its international profile of the city of peace & justice, The Hague is keen to adopt technologies that focus on privacy protection & security and adopt decentralised technologies such as edge computing, federated learning, wallet systems and other privacy enhancing technologies. The inclusion of grid factors in P2P trading and the test of different services is of major importance in this pilot. **Italian Pilot** *Location and Specific Challenges:* The demo is located in the central part of the Italian peninsula, in Abruzzo region. The site is in Vallevignale, a small town in the municipality of Notaresco, Teramo. An operative renewable energy community (REC) in Vallevignale is fully managed by EnGreen. The REC currently involves 10 buildings: 5 of these buildings can be considered prosumers (as they produce, self-consume and share their renewable energy production) and the remaining 5 are consumers (who can use the low-cost energy produced by the other members of the REC). The demo starts from the installed capacity of 42 kW of photovoltaic and 105 kWh of lithium storage, and the already installed 7 EV charging stations. Specific Challenges: Some of the challenges are related to the local context. In Vallevignale – being a rural community – the buildings are quite dislocated and the local sense of community is quite weak. This implied a cultural constrain in the initial REC promotion. The Vallevignale case is only composed by citizens (via citizen association) and for this reason it has a high replicability potential in rural areas as an example for other citizen associations. **Belgium Pilot** *Location:* The demo is located in Flanders, in the province of Antwerp. The site is located in Mechelen, a medium-sized Belgian city of approx. 87,000 inhabitants. KLIMAAN is the local citizen cooperation for renewable energy and operates a Citizen Energy Community (CEC) based on PV electricity production in the social housing neighbourhood Otterbeek. The current set-up results in a lot of excess solar power production, for which no immediate consumption is found in the social context. Most tenants take advantage of direct self-consumption, and the general acceptance rate to novel concepts among social tenants is low. Possible extensions of the CEC currently under investigation are charging infrastructure for EVs and the connection to a new district heating network from another nearby Woonland social neighbourhood. *Specific Challenges:* Considering the high capacity of the PV systems, there is excess electricity production during several periods. In this pilot, KLIMAAN intends to apply different matching approaches in order to get the running energy sharing schemes optimised, while upholding the social aspects of our set-up. At the same time, KLIMAAAN wants to implement an efficient management of its highly fragmented income streams. Through gamification, the pilot intends to raise the tenant involvement and reinforce the business case.
Barriers & lessons learned	Although it is too early for the project to share barriers and lessons learned, one of the clear learnings is that national regulatory and policy frameworks are crucial for enabling the existence of these energy communities and energy sharing frameworks.
Good practices	The project is at a too early stage to promote good practices.

4. Barriers

The barriers to the implementation of energy sharing were first identified in a survey, and then collectively during a meeting of Action 2 early 2024. All the inputs were then clustered and a list about 20 barriers was established (Figure 5).

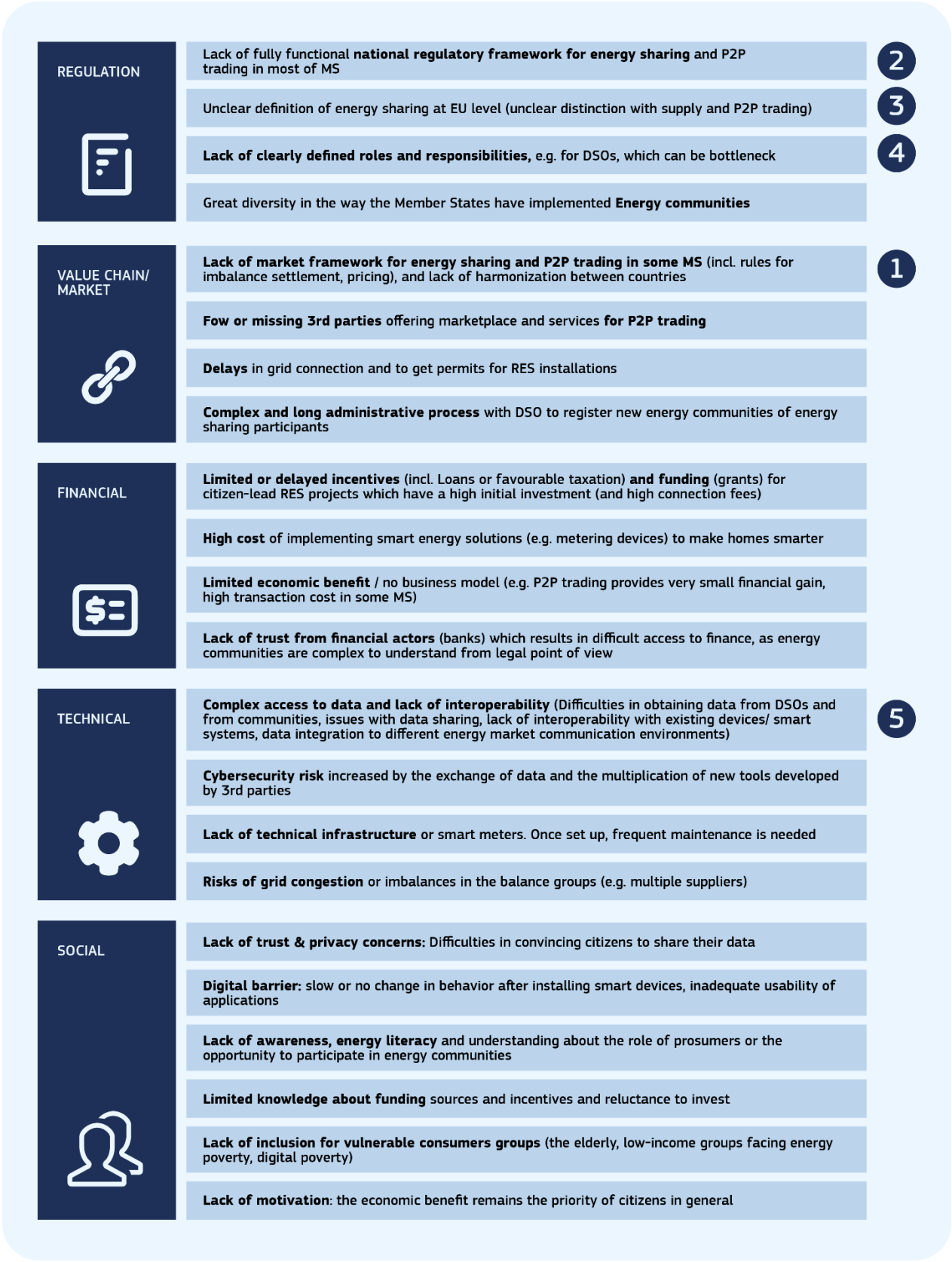

Figure 5: Barriers identified in Action 2 in February 2024, with "Top 5" barriers (1 being the most critical).

Barriers can be regulatory, financial, technical or social in nature. Their overall impact on the projects that answered the survey is illustrated in Figure 6: regulatory barriers are those with the most detrimental impact, followed by social and market barriers.

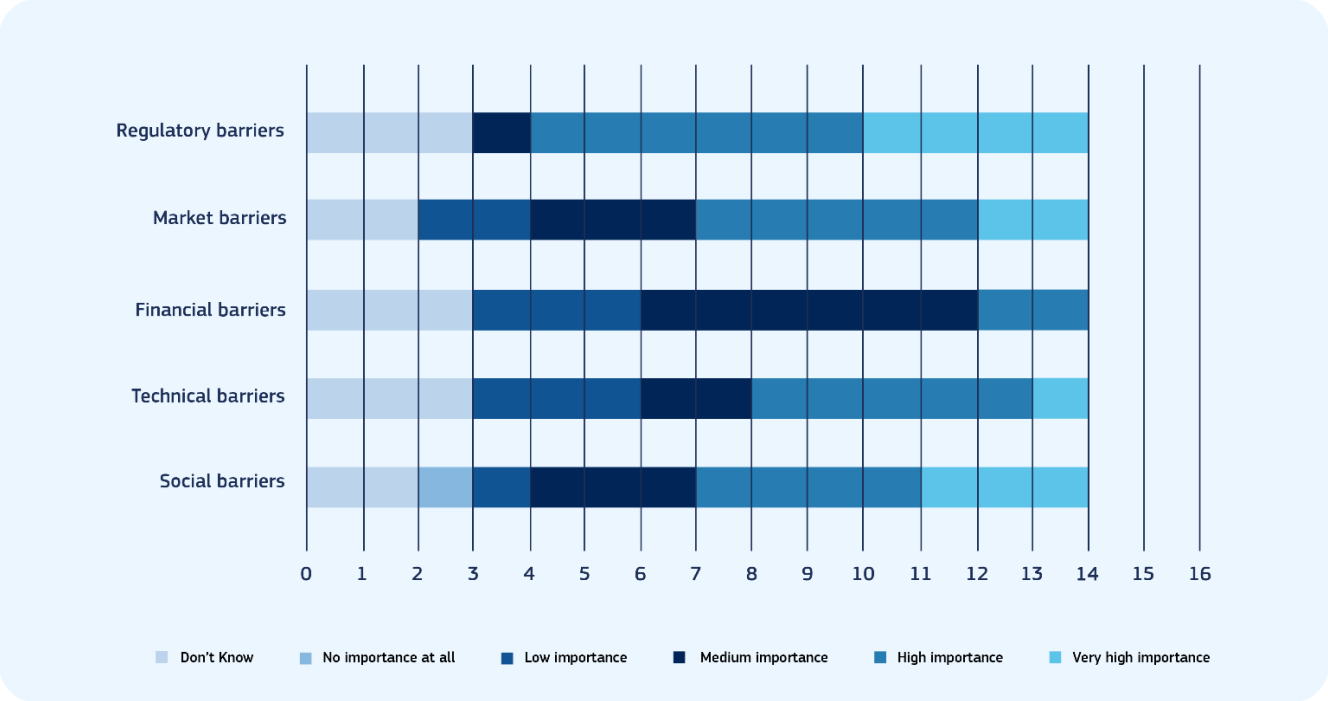

Figure 6: Impact of the different types of barriers according to survey respondents

The regulatory framework was deemed as overly complex by participating projects. The legislative texts adopted at Member State level to transpose the EU directives were considered as too restrictive, and not fully aligned with the EU definitions.

Since the elaboration of this list of barriers, the regulatory landscape has evolved at EU level, with energy sharing being now defined thanks to Directive 2024/1711, **which alleviates one of the barriers identified early 2024 by the participating projects** (see barrier numbered as "3" in Figure 5) . However, as Member States have until June 2026 to transpose the article about energy sharing, it is unlikely that the national regulatory frameworks will be simplified in the short term, and the list of other barriers can therefore still be considered valid.

Most of these barriers were encountered by several of the participating projects. Once again, sharing lessons learned proves invaluable in addressing these challenges more effectively. However, beyond ad hoc, short-term solutions, there is a pressing need for strategic recommendations to overcome these barriers sustainably.

5. Recommendations

Recommendations to address the main barriers, drawing on lessons learned and good practices from the participating projects, were identified and prioritised during two interactive workshops organised in Spring 2024. Eight key recommendations were finally selected.

Some of these recommendations target EU policy makers and regulators, while others target national regulators. They are presented by order of priority in the Table 3 below.

Table 3: List of recommendations in order of priority

Priority	Recommendation	*EU level*	*MS level*
1	Create implementing guidelines for MSs for energy sharing : clear definition, responsibilities of the different market players, and how it can be done (including through P2P trading), making sure that national regulations on energy sharing include necessary provisions on inclusiveness and consumer protection	✓	✓
2	Set up national and EU working groups bringing together regulatory bodies, DSO, suppliers, representative bodies for energy sharing participants (to be created if necessary), and EU projects, to share lessons learned and good practices (including on sharing coefficients)	✓	✓
3	Simplify legal registration process for communities, e.g. with a digital registration system	✓	✓
4	Allow for the creation of local energy markets to enable trading between communities		✓
5	If not already done, deploy intelligent metering system and harmonised communication standards		✓
6	Support DSOs so they can enable energy sharing, including data sharing with market actors	✓	✓
7	Implement a systemic and cross-sectoral approach, to avoid silos between electricity, heat, DH&C, gas and mobility	✓	✓
8	Set out a clear framework at EU level for data governance in the energy sector (data access, ownership, privacy, cybersecurity), with guidelines for MS on how to implement at national level, to build trust and enable new business models for energy sharing *(link to Action on Data Spaces)*	✓	✓

Recommendation 1:

Create implementing guidelines for MSs for energy sharing: clear definition, roles and responsibilities, and how it can be done (including through P2P trading), making sure that national regulations on energy sharing include necessary provisions on inclusiveness and consumer protection

Author: Karine Laffont-Eloire, LocalRES, Laura Bordo, ACCEPT project

Background

In the evolving landscape of energy markets, the rise of energy sharing and community-driven initiatives offers substantial opportunities to enhance grid efficiency, increase renewable energy adoption, and empower consumers.
However, the disparity between EU-level directives and national or local regulations creates significant barriers: local governments may struggle to apply EU rules that are not adapted to the unique needs of their regions, leading to delays or ineffective implementation. Additionally, the current regulatory framework in many regions lacks clarity regarding the roles and responsibilities of key market players, particularly DSOs. This ambiguity creates obstacles for energy-sharing participants, who often encounter delays and inconsistencies in obtaining necessary permits and accessing critical data. Without clear guidelines, DSOs face challenges in fulfilling their responsibilities, leading to potential conflicts, inefficiencies, and missed opportunities for innovation.
A concrete example of these challenges can be seen in the Greek pilot site of the ACCEPT project, where energy communities face significant difficulties due to costly administrative procedures and complex tax registration processes. These challenges are further compounded by the lack of clear guidelines on the responsibilities of various market players, including DSOs, particularly regarding permit issuance and data-sharing requirements. This regulatory ambiguity poses significant barriers to the effective participation of energy communities in energy-sharing and other market activities, underscoring the urgent need for clear and comprehensive regulatory guidelines.

Proposed actions

Action 1. Benchmark existing studies with impact assessment of energy sharing

Level of application: *EU: Y | National: N | Local : N*

- Make an inventory of studies made a national or EU level to assess the impacts and benefits energy sharing – including through P2P trading – for different types of users (e.g. potential economic benefit for households/ SMEs / public entities depending on the calculation and allocation methods) and on the grid (e.g. on grid congestion and need for reinforcement)
- Include sources such as DSOs, suppliers & P2P market actors, EU or nationally funded projects
- Investigate in particular projects and energy-sharing schemes that involve a kind of energy sharing organiser
- Draft recommendations on how to maximise benefits and minimise impacts

Action 2. Issue guidelines to accompany Member States through the transposition process for the Articles related to energy sharing in the recast of Directives (EU) 2018/2001 and (EU) 2019/944

Level of application: *EU: Y | National: N | Local : N*

These guidelines should include recommendations/ guidance (based on the above benchmark) about:

- The **geographical area**: we recommend harmonising the definition of the areas where energy sharing can be implemented, e.g. building/behind gird connection point; LV area or area with a radius of few kilometres; region/bidding zone/DSO area. For each type of area, the regulator should then define specific cost reflective network charges
- The **categories** of final customers that can participate in energy sharing
- The possible legal entity
- The possible legal forms, roles and responsibilities of the **energy sharing organiser**, which appears as a key enabler for energy sharing
- The different options for the **calculation and allocation methods** for sharing of renewable energy (including through P2P trading)
- Good practices for the calculation of **cost-reflective network charges**

They should also make a clear distinction between energy-sharing and peer-to-peer trading, and make sure that P2P trading is properly understood (i.e. asset to asset), and not mistaken as "P2Market" with a single transaction price.

Action 3. Make sure that national regulations on energy sharing include necessary provisions on inclusiveness and consumer protection

Level of application: *EU: Y | National: Y | Local : N*

Implementing guidelines should also include:

- Recommendations on the protection of vulnerable households to access energy, i.e. example of non-discriminatory measures that Member States could implement to ensure that energy poor and vulnerable households can access energy-sharing schemes.
- **Templates/ examples of model contracts** with fair terms, possibly with production allocation quota for vulnerable households

Recommendation 2:

Set up national and EU working groups bringing together regulatory bodies, DSO, suppliers, representative bodies for energy sharing participants (to be created if necessary), and EU projects, to share lessons learned and good practices (including on sharing coefficients and contracts)

Author: Paola Mazzucchelli (CIRCE)

Background

The lack of coordination between different stakeholders' groups, both at national and EU level, can slow down the adoption of energy sharing and flexibility measures by consumers and citizens, slowing down the energy transition.

In the past few years, new regulation has been introduced to speed up the integration of a higher share of renewable energy in the energy mix. Often, this entails an active role by consumers and citizens who are requested to install and use renewable energy, while providing additional services to the distribution grid in order to increase its flexibility and stability.

However, the complexity of the rules makes it difficult for consumers and citizens to fully grasp the possibilities offered by the new legislation, while cooperation with DSOs becomes more important to ensure the stability of the grid, while increasing its flexibility to accommodate higher shares of renewable energy.

Proposed actions

Action 1. Set up an EU stakeholders' group to increase cooperation

Level of application: EU: Y *| National: N | Local : N*

- Establish the list of EU stakeholders to be contacted (including EU associations representing DSOs, regulators, policy makers, citizens, RES industry) and set up the group.
- Organise regular meetings to better inform DSOs and citizens' groups about the results of relevant EU projects and other initiatives
- Discuss potential activities based on projects' results.

Action 2. Set up national coordination groups, mirroring the EU one

Level of application: *EU: N* ***| National: Y | Local : Y***

- Establish the list of national stakeholders to be contacted (including DSOs, national energy agencies, other regulatory entities, citizen associations representing groups of active customers and energy communities, etc.) and set up the group.
- Organise regular meetings to inform national stakeholders about relevant activities at EU level that can have an impact at the national level.
- Discuss potential activities (e.g. training, capacity building), and evaluate the possibility to set up local activity groups, to concretely implement the identified activities of interest.
- Define a **repository of best practices**, including templates to facilitate the creation of energy-sharing schemes (e.g. **template of contracts**) and energy communities. Templates of contracts to be used by energy sharing

organisers would support their uptake.

Action 3. set-up Local Activity Groups

Level of application: *EU: N* | ***National: N*** | ***Local : Y***

- Identify the stakeholders willing to implement relevant activities.
- Monitor the activity implementation.
- Inform the national coordination group and the EU one about the activity implementation and its effect on the energy transition.
- Establish a repository of local best practices.

Recommendation 3:

Simplify legal registration process for communities and collective self-consumption, e.g. with a digital registration system

Authors: Filipe Silva, COMMUNITAS project & Karine Laffont-Eloire, LocalRES

Background

The requirements to register an energy sharing initiative or an energy community vary greatly from one country to the other. In some cases, a registration must be made with the DSO (e.g. France). In other cases, a specific agency (e.g. Italy) manages this registration, and in some Member States, the regulator also gets involved (e.g. in Belgium/ Flanders). Some of those registration processes still require a lot of paperwork, where participants have to sign a paper copy: this raises an additional barrier to setting up large sharing initiatives.

On the other end, the registration of groups of participants engaging in energy sharing is a step that may facilitate the understanding of the process and make it more transparent to citizens. Without registration it is difficult to assess the number of national initiatives being created, as well as the different nature of those initiatives (e.g. Are they led by companies or citizens? What legal form do they take? Do they involve an energy sharing organiser? Do they qualify as a renewable or citizen energy community?). Registration would give a clear overview to the entities planning the grid on how to adapt to changes in the use of the local grid. At the same time, registration would encourage local DSOs to acknowledge this new type of actors and to support them better, as this has been a major bottleneck in several countries. A better understanding of the dynamics of these communities would also enable dedicated assistance and incentives to be set up.

As an example, in the COMMUNITAS project, the Spanish pilot site leader (Enercoop) mentioned that if they aim to establish an energy community, they need to compete with larger companies in public tenders for space available to install new energy assets (solar farm). While this process is compliant with current Spanish legislation, it is an obstacle to form energy communities as small groups of citizens in those areas do not have the necessary skills to compete in a public tender for space provided by the local municipality. A registration of energy sharing initiatives and energy communities would enable to define a specific target group for these tenders. If the municipality is giving this space especially to allow the formation of a citizen-led initiative, the tender should only be aimed at energy-sharing schemes, allowing only the local citizens/companies and the third parties supporting them to enter the tenders.

Proposed actions

Action 1. Create implementing guidelines that require Member States to register all energy-sharing schemes and energy community initiatives

Level of application: EU: Y | *National: N* | *Local : N*

Implementing guidelines supporting the revision of the EMD should make sure that the “relevant contact point” in charge of registering energy sharing arrangements also register key data such as the legal form of the ‘community’

(i.e. does it have a legal entity or not, and if yes, does it qualify as a REC or CEC), and other key indicators to be defined by *ad hoc* working groups.

Action 2. Set up a digital registration platform for energy-sharing schemes & energy communities at Member State level

Level of application: *EU: N* | ***National: Y*** | *Local : N*

To address the above requirements, the Member States should set up a simple digital platform that allows for the registration of energy communities, for easily tracking the development of such initiatives. The registration should at least identify the members of the community (with anonymisation if relevant), the generation and storage assets, the location, the legal form, and allow changes to be monitored. It should also simplify other registration processes that may be required within some Member States (e.g. tax registration, registration of legal entity, etc.).

The platform should be easy to use, even by citizens, and not become an obstacle to the set-up of communities. It should be seen as a way to increase transparency and create a legal framework that benefits communities without creating additional bureaucracy that requires detailed knowledge of the energy sector. .

Action 3. Develop a European level repository of the information provided by the Members States registration platforms

Level of application: EU: Y | *National: N* | *Local : N*

Initiatives such as the Energy Community Repository (now discontinued), developed by the EC, are great tools for citizens to learn about these concepts and to check other success cases, understanding how they can themselves implement energy communities locally. However, the lack of inputs from Members States means that the repository is dependent on local energy communities to provide information on a voluntary basis – and most of the time only those that are supported by R&D projects do so. By having all Member States reporting the registered energy sharing schemes/ communities to an EU repository, this would create a much larger database, with many more examples, supporting citizens in the identification of cases that are similar to their own or even to identify local communities near them that they are not aware of. Moreover, this data would be extremely useful for the scientific community that could understand the development of such initiatives at European level and develop accurate projections of the future of the European energy system.

Recommendation 4:

Allow for the creation of local energy markets to enable P2P trading and trading between communities

Author: Juan Ignacio Pérez-Diaz, eNeuron project

Background

Peer-to-peer and community or collective self-consumption offer new models for trading energy locally. Local energy markets have also emerged as a leading approach to foster the integration of more DERs into the electricity system. However, barriers remain to the adoption and deployment of local energy markets: they include the lack of a holistic, scalable and replicable approach to market design and operation (and the associated regulation and network codes), cybersecurity and market participant privacy.

Proposed actions

Action 1. Determine the stakeholders that take part in local energy markets as well as their rights and responsibilities

Level of application: *EU: N* | ***National: Y*** | *Local : N*

Every MS should set out a set of categories for the various stakeholders that can or must take part in local energy markets within their territory in compliance with the EU legislation. For each type of stakeholder, MSs should set out their rights and responsibilities in the local energy markets, i.e. what they must do and what they can and can't

do. Some questions requiring clarification are e.g. whether a local energy market operator is necessary, who can and can't assume such role if necessary, and whether the distribution network operator must/can check and revise the P2P energy transactions for security reasons.

Action 2. Establish the administrative processes by which local energy markets must be created.

Level of application: *EU: N* | ***National: Y*** | *Local : N*

MSs must establish the sequence of administrative process by which local energy markets in their territory must be created, and define the conditions under which each step of the process must be developed.

Action 3. Define the rules for the participation in local energy markets, and the products to be covered

Level of application: *EU: N* | ***National: N | Local : Y***

Every local energy market in a MS shall adhere to the high-level definitions mentioned in Action 1 and be created following the process suggested in Action 2. The specific rules for the participation in local energy markets do not have to be necessarily the same across all local energy markets within a MS. Rules related to the metering requirements and communications might differ across local energy markets, as a function of the adopted market structure and trading platform. Analogously, specific rules related to the energy trading process can be different across local energy markets, e.g. bid format, bid submission time(s), bid matching or clearing process, settlement periods, etc.

Recommendation 5:

If not already installed, deploy intelligent metering system and harmonised communication standards

Author: Alina Anapyanova, Michael Niederkofler (RENergetic)

Background

To enable energy sharing and peer-to-peer trading in the Member States, communication and data sharing among the relevant actors is essential. All the peers should have the same information level with the same level of trust among the peers. The peers must agree on the amounts and units of energy being shared and traded and ensure that these are correctly exchanged. Currently, several smart metering systems are offered on the markets in different Member States. Not all of them can share and communicate data to the same quality standards to establish accountable data sets of 15-minute time periods, necessary for the DSOs and balance responsible parties to take action in case of grid congestion or imbalances in the balance groups.

Therefore, a reliable metering and data communication system is necessary to evaluate how much energy and flexibility are available in the respective grid area – an important factor in incentivising grid-friendly energy sharing and decentral trading. To make data available to the consumers and energy communities, the type of data needed must first be determined – Active/reactive Power or Energy, Voltage, cos phi. Secondly, it must be made available in min 15-minute intervals, e.g voltage in 10 min. The data interfaces must be thus standardised and made available to the customers, peers, energy communities, and DSOs. Without common interfaces, interoperability between different devices and market actors cannot be established – energy sharing and peer-to-peer practices cannot be scaled up and implemented in different grid areas. Communication standardisation and functioning metering systems are the key to facilitating these practices in all Member States and must be regulated and prescribed at the European and the national level.

Proposed actions

Action 1: Setting up a reliable metering system

Level of application: *EU: N* | ***National: Y*** | *Local : N*

- Ensuring that the metering infrastructure is provided by/through a metering point operator or through a DSO, enabling independent and correct metering on the exchanged and shared amounts of energy;

- Standardised metering requirements and metering concepts for all distribution grids in the respective Member States (ex.: a reliable and functioning communication of 15-minute data Sets)
- Including the peers and the energy communication into the existing market communication processes to avoid complexity.

Action 2. Standardise data communication standards and interfaces at the European and national level

Level of application: EU: Y | National: Y *| Local : N*

- ***European and national*** *:* Develop standardised data communication standards at the European and national level (in the delegate acts, grid codes, standards, laws) to ensure interoperable communication between different devices (heat pumps, EV charging stations, batteries, PVs, Converter, etc.) among the active customers, communities, DSOs. Details can be specified in the respective MS but should be applicable at the national level.
- ***European and national*** *:* Develop standardised data interfaces to make data available to all relevant parties and to ensure interoperability.
- ***European****:* Engage the ENTSO-E and the EU DSO entity in this consultation process to define the common European requirements in norms or grid codes.

Recommendation 6:

Support DSOs so they can enable energy sharing (incl. data sharing with market actors)

Author: Alina Anapyanova (RENergetic), Karine Laffont-Eloire (LocalRES)

Background

Different Member States have regulated the DSOs role differently. For instance, in Austria, where the implementation of energy communication was rather successful in the recent years, the DSOs are both responsible for the grid operation and metering, and data collection from the energy communities exercising energy sharing. This has facilitated the integration of energy communities into the markets and the coordination among all the involved market actors. The use of existing infrastructure and digital communication processes for market participation, instead of setting up new and parallel digital systems, has accelerated the implementation of energy-sharing within the communities. They could simply register with a market participation ID at the Austrian central data platform (EDA) and their shared data could be accessed through the DSOs for billing purposes.

The challenges remain with further flexibilisation on the demand side – the system must allow room for a more grid-friendly behaviour based on real-time data, to adjust transactions in the process of P2P trading and energy sharing. Energy communities must be able to change their energy consumption more spontaneously, depending on the current grid capacity and their energy generation. In this way, grid operators can equally benefit from the energy communities by reducing grid congestion or even controlling some of the communities' assets. For this purpose, digital tools and real-time data are essential.

Investing in digital technologies is currently not sufficiently incentivised in the Member States – these costs cannot always be accounted for DSOs, which may represent a major obstacle, especially for small ones. Adjusting the regulatory framework in this respect is an essential step for the energy transition.

Proposed actions

Action 1. Making use of existing digital infrastructure and processes for energy sharing

Level of application: *EU: N* *|* ***National: Y*** *| Local : Y*

- Use the existing digital infrastructure and the existing market processes to integrate energy sharing schemes and energy communities into the available system (not via external or third-party systems in order not to overcomplicate the process)

- Allow for a live-data or a 15-minute interval data communication to support the flexibilisation of demand and grid-friendly behaviour
- Integrate energy sharing schemes and energy communities into an existing data-platform for the energy market

Action 2. Unify the role of the DSO and the metering agent

Level of application: *EU: N* | ***National: Y*** | ***Local : Y***

- Make DSOs responsible for the metering systems, if this has not happened yet, as two separate roles between the DSO and the metering agent might lead to complications for energy-sharing schemes and energy communities.
- Unify the technology level requirements for smart metering (see previous recommendation).

Action 3. Adjusting the incentive system ordinances in MS

Level of application: *EU: N* | ***National: Y*** | *Local : N*

- Adjust the cost regulation for DSOs in MS, so that investment in digital infrastructure and IT-costs (OPEX-Costs) can equally be financed and reimbursed through the grid utilisation fees;
- Create financial incentives for DSOs to support energy sharing schemes and energy communities in the form of accountable costs in the regulatory framework;
- Investigate other incentives such as tax reductions tax-based funding mechanisms.

Action 4. Improve the access to funding programmes for DSOs

Level of application: EU: Y | ***National: Y*** | *Local : N*

- The access to existing programmes such as Horizon, CEF energy, Modernisation Funds or funds managed under the Common Provision Regulation should be facilitated for DSOs. Such programmes have to ensure that DSOs of all sizes and throughout Europe are adequately supported in the digitalisation of their infrastructure (hardware, software and skilled workforce) so they can more easily connect decentralised RES and enable new energy sharing schemes or energy communities.
- Both OPEX and CAPEX should be covered, and local projects – even without physical cross-border connection – should be funded, provided they can prove their added value for RES integration, decarbonisation of the energy systems and for the EU single market.

Recommendation 7:

Implement a systemic and cross-sectoral approach to avoid silos between electricity, heat, DH&C, gas and mobility

Author: Paola Mazzucchelli (POCITYF) and Karine Laffont-Eloire (LocalRES)

Background

Europe's energy future must rely on an ever-growing share of geographically distributed renewable energies, integrate different energy carriers flexibly, while remaining resource-efficient and avoiding pollution and biodiversity loss. Energy system integration – the coordinated planning and operation of the energy system 'as a whole', across multiple energy carriers, infrastructure, and consumption sectors – is the pathway towards an effective, affordable and deep decarbonisation of the European economy in line with the Paris Agreement and the UN's 2030 Agenda for Sustainable Development.

In a communication from July 2020[5], the European Commission has detailed its strategy on energy system integration, proposing a vision on how to accelerate the transition towards a more integrated energy system, one

[5] Powering a climate-neutral economy: An EU Strategy for Energy System Integration- COM(2020) 299 final.

that supports a climate neutral economy at the least cost across sectors – while strengthening energy security, protecting health and the environment, and promoting growth, innovation and global industrial leadership.

Among the proposed activities, the following are of particular interest:

- As part of the Renovation Wave initiative, promote the further electrification of buildings' heating (in particular through heat pumps), the deployment of on-buildings renewable energy, and the roll-out of electric vehicle charging points.
- Develop more specific measures for the use of renewable electricity in transport, as well as for heating and cooling in buildings and industry, in particular through the revision of the Renewable Energy Directive, and building on its sectoral targets.

Proposed actions

Action 1. Introduce better coordination among relevant HE Partnerships, and with relevant Working Groups of the SET Plan.

Level of application: EU: Y *| National: N | Local : N*

- Identify topics in HE Partnerships and in SET-Plan specifically dedicated to system integration.
- Arrange discussion groups, with representatives of the partnerships concerned, on common topics.
- Draw up recommendations on how to better account for system integration & cross-sectoral approaches in innovation and the EU-funded projects

Action 2. Support integrated local integrated energy planning and governance

Level of application: EU: Y | National: Y | Local : Y

- Establish local or regional coordination bodies to align strategies on urban planning, building renovation, RES integration and heating and transport electrification to identify where energy sharing should be prioritised
- Support the establishment of energy sharing organisers (ESOs) to ensure they can fulfil a role of enabler that will trigger new energy sharing initiatives, but also reduce grid congestion issues by optimising flexible loads (including storage and RES generation)
- Investigate the potential and feasibility of building one-stop shops (OSSs) delivered by local ESOs, and of combining these OSSs with those that have to be developed as part of the Energy Performance of Building Directive

Action 3. Update regulations and market design to enable multi-energy sharing

Level of application: EU: Y | National: Y *| Local : Y*

- Update EU definitions of energy sharing: while renewable energy communities can cover different energy vectors, citizen energy communities and energy-sharing schemes are focused on the electricity vector only (although CEC can also provide services related to energy efficiency – which includes heating – and eV charging). The role of energy-sharing schemes and energy communities in managing multi-vector energy flows and/or implementing cross-sectoral synergies should be facilitated thanks to updated EU definitions and national enabling regulatory frameworks (potentially starting with sandboxes).

Recommendation 8:

Set out a clear framework at EU level for data governance in the energy sector (data access, ownership, privacy, cybersecurity), with guidelines for MS on how to implement at national level, to build trust and enable new business models for energy sharing (link to activities on Data Spaces)

Author: Natalia Lisowska, Data Cellar

Background

The energy sector is becoming more digitalised, thus, more and more dependent on digital tools and energy data.[6] As result, data governance, in particular, energy data access, ownership, sharing, privacy, and cybersecurity, is vital for the energy system operation as well as the provision of different energy activities, for instance, peer-to-peer trading and energy sharing.[7] In this context, data governance structures are also crucial for the development and operationalisation of a common European energy data space, which is technical infrastructure for energy data exchange, that will ease energy data sharing across the EU and between different energy market players.[8]

Currently, there is no common definition of data governance and its aspects are regulated by different regulatory frameworks,[9] among the others, Data Governance Act (DGA), Data Act (DA), Digital Markets Act (DMA), General Data Protection Regulation (GDPR), Free Flow of Non-Personal Data Regulation (FFND), ePrivacy Regulation and Regulation on electronic identification and trust services (eIDAS). These frameworks differ in terms of their main objectives and scope, as well as in rights and obligations they introduce. Furthermore, to some extent, they also overlap on a number of issues, for instance, data ownership, data access or privacy. This makes it challenging to navigate through them, for example, to decide who could be a data owner of a data set that is controlled by multiples stakeholders.[10] Their intersection also makes it difficult to distil the most important requirements that are or should shape data governance in the energy sector.

As a result of the foregoing, there is no clear European framework for data governance. Therefore, it is strongly recommended to outlinea common European framework for the data governance in the energy sector as well as to create guidelines for its national implementation. This would foster trust between different energy stakeholders and allow for the creation of new business models for energy sharing and peer-to-peer trading.

Proposed actions

Action 1: Identify the types of data being used and analyse the overlap between different relevant regulatory frameworks

Level of application: EU: Y *| National: N | Local: N*

- Identify the types of data being used and regulatory framework applicable to them,
- Examine relationship between different regulatory frameworks among the others, Electricity Markets Directive and its implementing regulations, Energy Performance of Buildings Directive, General Data Protection Regulation Data Act and Data Governance Act in terms of their legal requirements and potential conflicts between them.

Action 2: Define data governance in the energy sector and describe legal requirements that need to be fulfilled in order to be compliant with the EU law as well as explain how such compliance could be achieved.

Level of application: EU: Y *| National: N | Local: N*

- Explain how data governance, including data access, ownership, privacy, cybersecurity, is currently regulated at the EU law. In doing so, examine relevant data requirements, conditions for data access, sharing and re-use, as well as different data handling processes as well as analyse relevant (data) roles, rights, duties and obligations of different market players, national authorities and other relevant parties,
- Identify main legal challenges related to data governance by consulting relevant stakeholders, European and national projects, Member States, and other relevant bodies.
- Clearly define data governance framework at EU level. While doing so, gather information about data governance process across the EU, from the literature, national and European project as well as from consultation with other stakeholders which will identify the current state of data governance, the most pressing challenges and the best practices.

[6] See Digitalisation of the energy systems (europa.eu)
[7] See EUR-Lex - 52022DC0552 - EN - EUR-Lex (europa.eu); Actions to digitalise the energy sector (europa.eu)
[8] See Common European Energy Data Space - European Commission (europa.eu); pdf (europa.eu)
[9] See study carried by the OneNet project D6.2-OneNet-v1.0.pdf (onenet-project.eu); pdf (europa.eu)
[10] European (energy) data exchange reference architecture 3.0 - Publications Office of the EU (europa.eu)

Action 3: Harmonise the existing terminology

Level of application: EU: Y | National: Y | Local: Y

- Different terminologies relating to the data governance are being used by different organisations supporting creation of data spaces (such as Gaia-X, IDSA) and regulatory frameworks. There is a need to create a repository that will propose common approach to the terminology.

Action 4: Develop data governance guidelines for Members States which would explain how to implement the EU data governance framework at the national level

Level of application: *EU: N* | ***National: Y*** | *Local: N*

- Building on Actions 1-3 explain how data governance, data access, ownership, privacy, cybersecurity is currently regulated in the EU energy sector,
- Create a list of legal requirements for complying with the EU data governance framework,
- Describe relevant legal, technical, operational, and organisational measures that could be employed to comply with the EU data governance framework, for instance, outline certifications that should be obtained by different market players and stakeholders.
- Map out the current data governance practices (including those from national and European projects), indicate the main challenges relating to data governance, and how they were or could be addressed.

6. Conclusion

EU funded projects under the BRIDGE umbrella have joined forces to study the current landscape of energy sharing throughout Europe. Their contributions have enabled existing national regulatory frameworks in more than 15 countries to be reviewed. Countries where regulation is rather advanced include Portugal, France, Spain, Italy and Austria. However, the regulatory frameworks in those countries still have some limitations, e.g. in Austria only energy communities can perform energy sharing, in Spain the Energy Sharing Organiser does not exist yet and the process to register an energy-sharing arrangement may take time. In several cases, fully dynamic energy sharing coefficients are not possible yet. Regulatory frameworks are being developed in central and northern Europe (e.g. Germany, Czechia, Sweden, the Netherlands, Denmark) but are not completely functional for now. Overall, the reports provided by BRIDGE projects demonstrate a positive move towards the establishment of supportive regulation of energy sharing throughout Europe. The sharing of good practices is critical at this stage, to ensure that regulation truly supports energy sharing initiatives and also implements a level playing field for those citizen-led schemes.

Projects also identified barriers to the uptake and roll-out of energy-sharing schemes, and the most mature projects shared lessons learned and good practices from their demonstrations. Finally, they collectively issued recommendations to address the main barriers and unlock the potential of energy sharing in Europe. These recommendations include the development of implementing guidelines to support Member States in the process of transposing the new Article 15 on the “right to energy sharing”.

Projects participating in Action 2 of the WG Regulation will continue working together in the next months to enrich the present report with new findings (e.g. for countries not covered yet), and explore in more detail specific topics such as consumer rights and protection. It is indeed essential to make sure that national regulations on energy sharing include necessary provisions on inclusiveness and consumer protection.

Synergies with other BRIDGE WGs and the WGs of ETIP SNET working on the topic of energy sharing or energy communities will also be developed, with joint workshops, for example.

7. References

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